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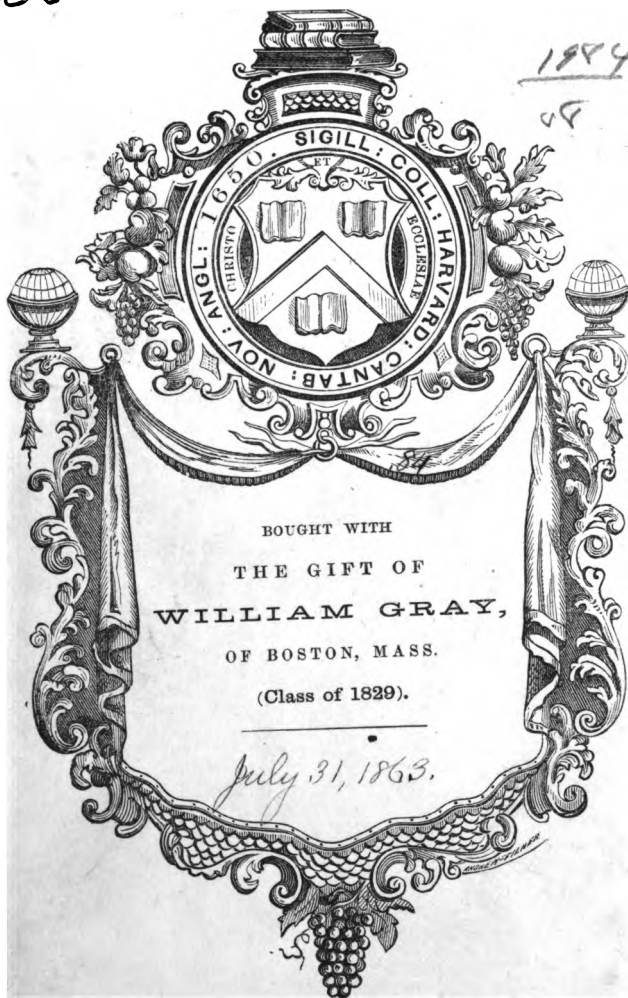
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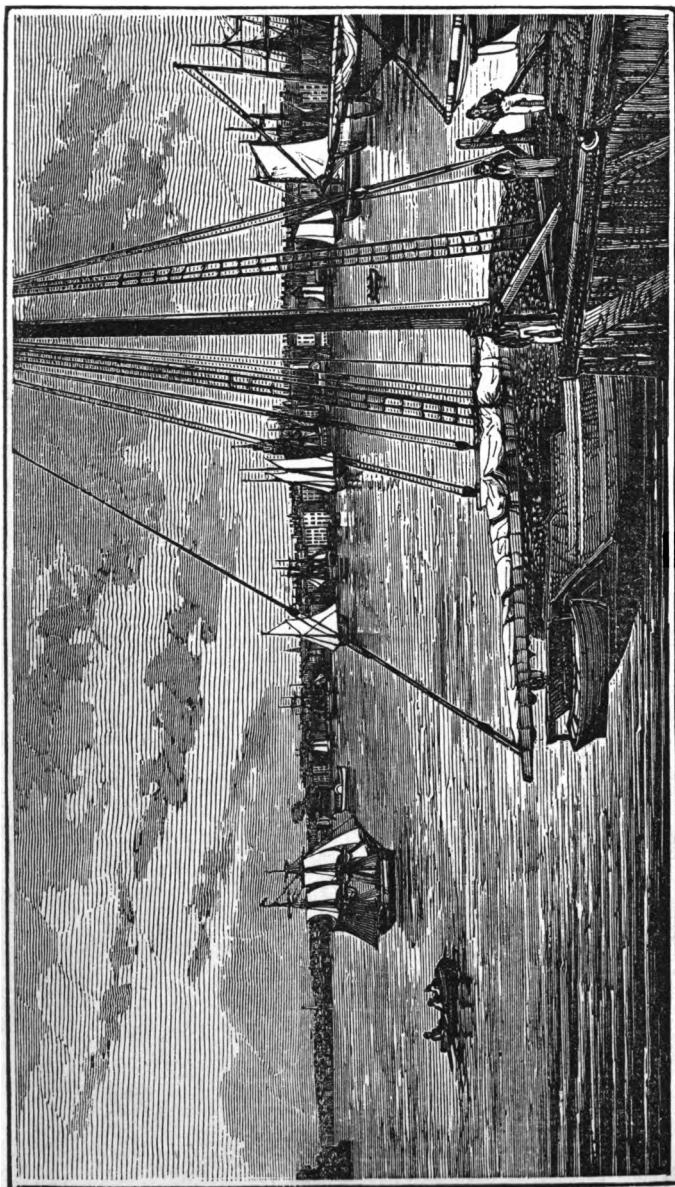
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PHILADELPHIA, FROM KENSINGTON.

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A

GEOGRAPHY OF PENNSYLVANIA:

CONTAINING

AN ACCOUNT

OF THE

HISTORY, GEOGRAPHICAL FEATURES, SOIL, CLIMATE, GEOLOGY,
BOTANY, ZOOLOGY, POPULATION, EDUCATION, GOVERN-
MENT, FINANCES, PRODUCTIONS, TRADE, RAIL
ROADS, CANALS, &c. OF THE STATE;

WITH A

SEPARATE DESCRIPTION OF EACH COUNTY,

AND

QUESTIONS FOR THE CONVENIENCE OF TEACHERS.

TO WHICH IS APPENDED,

A TRAVELLERS' GUIDE,

OR TABLE OF DISTANCES ON THE PRINCIPAL RAIL ROAD, CANAL
AND STAGE ROUTES IN THE STATE.

BY CHARLES B. TREGO,

Late Assistant State Geologist; Member of the American Philosophical Society;
of the Association of American Geologists and Naturalists, &c., &c.

Illustrated by a Map of the State and numerous Engravings.

PHILADELPHIA:

EDWARD C. BIDDLE, 6 SOUTH FIFTH STREET.

STEREOTYPED BY C. W. MURRAY & CO.

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No. 19 St. James Street,
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PREFACE.

EVERY citizen of a free commonwealth, and more especially he who exercises the right of suffrage, should, as far as practicable, be made acquainted with the character and condition of the State over which he is one of the joint sovereigns, and for the proper government of which he is partly responsible. A consideration of the advantages to be derived from a more intimate knowledge of the physical features, population, institutions, productions, resources, trade and improvements of Pennsylvania, has led to the preparation of this volume, in the hope that it might be found serviceable in the cause of education, as well as acceptable to the community at large.

There is no work extant which affords that general and minute information both useful and desirable to the student, the man of business, and the traveller, who may seek for a more extended knowledge of this noble State than is to be obtained from the Geographies in common use, in which but a few pages (generally three or four at most) are devoted to the description of a commonwealth containing almost two millions of inhabitants, and having a territory nearly equal to that of England in extent. To supply this defect, and to give such an account of Pennsylvania as may lead to a more full and intimate acquaintance with its actual condition, has been the object of the present work, which, it is hoped, will not only be found useful in families and to individuals as a book of reference, but one which may be used with advantage in our general system of school education. With this view, questions have been added to each section for the convenience of teachers.

The work is divided into two parts, with a historical introduction prefixed. The first part contains an account of the general geographical features of the State, its soil, climate, &c., with a descriptive sketch of its geology, botany and zoology; the character of its population, education, government and finances; its productions of agriculture, manufactures, mines and forests; its internal improvements, trade and commerce. In the second part will be found a particular description of each county, in alphabetical order; embracing an account of its physical aspect, geological character, mineral products, soil, streams, towns and villages, productions, canals, rail roads, turnpikes, bridges, &c.,—the assessed value of property, the state of education, colleges, academies and schools, religious denominations, natural curiosities, &c., together with historical sketches of the early settlement, and such other particulars as have been deemed worthy of notice.

With regard to the sources from which our information has been derived, care has been taken to select those upon which the most reliance could be placed, and to reject much that has been heretofore published which was found to be erroneous or doubtful. In

the course of his duties as Assistant State Geologist during four years, and on various other occasions, the author has visited most parts of the State, and has thus enjoyed opportunities of acquiring much local information concerning the different subjects embraced in this work. For a description of the geological character and mineral productions of those districts which he has not had an opportunity of examining, and for the general arrangement and classification of the various rock formations, reference has been had to the annual reports made to the legislature by the State Geologist. In our sketches of historical events, the works of Gordon and other historians of the State have been freely used; as have been also many other books and documents containing information suited to our purpose.

In order to obtain more full and complete materials for our undertaking, and to enable us to do ample justice to every portion of the State, letters requesting information upon various interesting subjects were addressed to such gentlemen in the different counties as were deemed most likely, from their known intelligence and ability, to afford the desired answers; but we regret to say that from only a very few of them have any replies been received. Our grateful acknowledgments are, however, due to the following named gentlemen for valuable communications respecting their several counties: Professor Jacobs of Adams, Isaac Lightner, Esq., of Allegheny, Dr. M'Crea of Berks, Dr. Cartee of Bucks, James Lesley, Esq., of Dauphin, Judge Smith and Messrs. Crozer and Painter of Delaware, George Ford, Esq., of Lancaster, and T. Nicholson, Esq., of Susquehanna. The author would also respectfully acknowledge his obligations to those of his fellow members of the legislature who have kindly aided him with information on various subjects in the districts represented by them.

For the substance of the article on Zoology we are indebted to Professor S. S. Haldeman, and for valuable assistance in that on Education, to Professor A. D. Bache,—gentlemen whose acknowledged abilities and zeal in their respective pursuits, as well as their labours for the promotion of general science, are well known and highly appreciated. Whatever merit may be found in our account of the Trade and Commerce of the State, is due to the kindness of a friend whose commercial pursuits and general acquaintance with the subject have enabled him to supply our want of knowledge in this department. For the original drawings from which most of our engravings illustrative of natural scenery have been taken, we are indebted to the kind liberality of W. T. Russell Smith, an artist of acknowledged merit in his profession.

A book of this kind must, from the nature of the subject, be little else than a mere compilation. The writer is therefore aware that he can lay but small claim to originality, and will be satisfied if it shall be found that he has compiled judiciously, and his labours be conducive to a more intimate and thorough acquaintance with the features, character and resources of his native State.

Philadelphia, August, 1843.

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HISTORICAL INTRODUCTION.

THE earliest settlements made by Europeans within the limits of Pennsylvania were by a colony of Swedes, who in the year 1638 purchased from the natives the land upon the western shore of Delaware bay and river, from Cape Henlopen to the falls opposite the present city of Trenton. In 1642, John Printz, the Swedish governor, erected for his own use a handsome and convenient mansion on Tinicum island, below the mouth of the Schuylkill, and also caused a church to be built, which was consecrated in 1646. In this neighbourhood the principal settlers established themselves. The Dutch West India Company, however, also laid claim to this territory under a grant from the government of Holland, and in 1654 they subdued the Swedes, and brought them under the dominion of the government of New Netherlands, now New York, which then belonged to the Dutch.

When the English conquered New Netherlands in 1664, the Dutch possessions on the Delaware also fell into their hands, and the whole country remained for several years subject to the English governors of New York.

William Penn, the son of Sir William Penn, a distinguished admiral in the British navy, having embraced the religious sentiments of the people called Friends, or Quakers, suffered much persecution on that account, and seems to have looked towards the new settlements in America, as a place where he might found a colony as an asylum for his persecuted brethren. Accordingly, in 1680, he petitioned King Charles II. for a tract of land lying north of the patent previously granted to Lord Baltimore, and west of the Delaware. This was readily granted to him in consideration of a debt of sixteen thousand pounds, due to him in right of his father, from the government. The charter was dated March 4, 1681, and constituted William Penn and his heirs true and absolute proprietaries of the province of Pennsylvania, saving to the crown their allegiance and the sovereignty.* He and his heirs and deputies were empowered to enact laws with the assent of the freemen of the province, to erect courts of justice, and generally to administer the government, provided that nothing should be done repugnant to the laws or sovereignty of England. No tax or duty was to be laid on the people or their property by the king, unless by consent of the proprietary, governor or assembly, or *by act of parliament*.

* This Charter is yet preserved and hangs in a frame in the Office of the Secretary of the Commonwealth at Harrisburg.

Soon after this, Penn published an account of his newly acquired territory, and offered the land to purchasers at the rate of forty shillings per hundred acres, with a quit rent of one shilling per annum forever. His offers were soon embraced and several companies of emigrants sailed from London and Bristol to take possession, landing in December 1681, at Upland, now Chester. They were chiefly of the society of Friends, and being temperate, industrious and economical, conducted themselves in the difficulties and hardships of their new situation with so much prudence and circumspection as to avoid most of the dangers to which a new colony is usually subject. Their success induced others to follow, and so early as August 1683, the population was estimated at four thousand. Penn himself soon followed the first colonists, and landed at Newcastle, October 24, 1682.

He immediately proceeded to establish his government over the infant province, and convened an assembly which met at Chester on the 4th of December. This first legislature of Pennsylvania, during a session of three days, enacted three laws. 1. An act annexing the Lower Counties to the province. 2. An act naturalizing the Swedes, Dutch, and other foreigners in the province. 3. The "great law," comprising the laws agreed on in England as a general system of jurisprudence.

The conscientious Penn still regarded the Indians as the rightful possessors of the soil, and invited them to a conference at Shackamaxon, (now Kensington,) where they assembled in great numbers. Here a formal treaty of peace and amity was made; they were paid for their lands, and departed for their forest homes full of love and admiration for the great and good *Onas*, as they called Penn. This treaty, simple but sincere, remained inviolate for seventy years. Voltaire says, "It was the only treaty between these people and the Christians that was not ratified by an oath, and which was never broken."

The city of Philadelphia was laid out at a place called by the Indians *Coaquannock*, between *Wicacoa*, now Southwark, and *Shackamaxon*. During the first year eighty houses were erected, and the establishment of various mechanical arts, as well as a profitable trade soon gave strength to the infant city. Fresh arrivals of emigrants poured into the province from England, Wales, and Germany. The Welsh settled upon the Schuylkill some miles above Philadelphia, and the Germans, establishing themselves on the north, founded the village of Germantown. Four years after the grant of the charter to Penn, the province contained twenty settlements, and Philadelphia two thousand inhabitants.

In August 1684, Penn having received intelligence that his presence was necessary in England, concluded to leave the colony for a time, and return to the mother country. He had established a government, and beheld his people happy and prosperous in their civil and religious liberty. He appointed five commissioners of the provincial council, with Thomas Lloyd as president, to administer the government during his absence. Shortly after his arrival in England, King Charles II. died, and was succeeded by

James II. The troubles in England, during the reign of that prince, involved Penn and his colony in difficulty, and after the revolution of 1688, which placed William and Mary on the throne, Penn was several times imprisoned, in consequence of his religion and his supposed adherence to the cause of the fallen monarch. The government of Pennsylvania was taken into the hands of the king, who appointed Colonel Fletcher, at that time governor of New York, to administer the affairs of the province. There seems to have been little cordiality of feeling between Governor Fletcher and the people of the province, and with the provincial assembly he was continually engaged in disputes and contentions.

The suspicions which had so long rendered the king unfriendly to Penn, were at last removed. He had friends among the leading men who were in the confidence of the sovereign; he was heard before the privy council, honourably acquitted, and restored to his proprietary rights by patent dated August 1694. He now desired again to visit Pennsylvania, but being prevented by pecuniary difficulties, he continued William Markham as deputy governor. The colonial assembly differing with the Governor, and complaining that their chartered privileges had been broken, a new frame of government was agreed upon, more democratic than the former, and defining more explicitly the powers of the assembly, and the duties of the several officers. This, however, does not seem to have been sanctioned by Penn, and continued in force only until he arrived in the province in 1699.

On this second visit he was accompanied by his family, and probably designed to spend the remainder of his life in Pennsylvania.

The house which he occupied, and in which his son John Penn was born, is still standing at the southeast corner of Second street and Norris' alley. The front has since undergone some alterations, but enough of the old fashioned peculiarity of the structure is still visible, to distinguish it as a relic of the olden time.



William Penn's house, as in 1700.

The proprietary was far, however, from finding quiet and repose. The colonists were still dissatisfied, and demanded further concessions and privileges; the intercourse with the Indians, and the question of negro slavery also furnished sources of continual trouble and anxiety. He was, moreover, engaged in a dispute with Lord Baltimore, the proprietor of Maryland, concerning the boundary line between the two provinces; a controversy which lasted many years, and was at last settled by Mason and Dixon, who were appointed commissioners for the purpose, and who finally established the boundary line in 1768, and set up a hewn stone at every mile along it, many of which are yet standing.

Penn, having determined to return to England, in order to satisfy the colonists, prepared once more a new frame of government for the province, still more liberal, and conferring greater powers on the colonial assembly. This charter the three lower counties, Newcastle, Kent and Sussex, refused to receive, and separating from Pennsylvania elected an assembly for themselves, still acknowledging the authority of the governor.

In November 1701, Penn sailed for England, leaving Andrew Hamilton as his deputy, whose administration was embittered by the disputes of the assembly. Penn was harassed by complaints, and made several changes in the administration. At length wearied with the continual dissensions and controversies in the province, and finding his health declining, he resolved to transfer the government of Pennsylvania to the crown, still retaining his right to the soil and the quit rents. He addressed an admirable letter to the assembly, in which his wisdom and affectionate concern for the future welfare of the province are strongly marked. He died in 1718, leaving his interest in Pennsylvania as an inheritance to his children, which they continued to possess until the revolutionary war, when their claim was purchased by the Commonwealth for 130,000 pounds sterling, about 580,000 dollars.

After the death of William Penn, a dispute arose concerning the validity of his transfer of the government, and it again devolved to his sons John, Thomas, and Richard Penn, by whom it was held, under different deputy governors, until the revolution. In 1729 upwards of six thousand emigrants arrived, and for several years following the influx was very great,—principally from Germany and Ireland. They settled chiefly in the counties of Northampton, Berks, Lancaster, York, Cumberland, Bedford, Northumberland, and Westmoreland, forming a thriving and industrious people, and introducing a variety of useful arts, and manufactures. The Germans seem to have acted with admirable foresight in locating their settlements on some of the best soil in the province for agricultural purposes; and we still see their wealthy descendants occupying the rich limestone valleys where their ancestors from the "Father land" first reared their humble dwellings and found a happy home.

Thomas Penn arrived in 1732, and two years afterwards John Penn, the senior proprietary visited the province. Patrick Gordon was the deputy governor from 1726 to 1736, and during

his administration the province increased in population, improved in morals, and prospered in commerce. Large quantities of grain were shipped to Lisbon, and the vessel frequently sold as well as the cargo. Provisions were shipped to the West Indies, in return for which sugar, molasses, and specie were obtained; and a trade with Madeira, the Azores and Canary islands also flourished. The laws relating to inspections were revised, an auctioneer was appointed, and an insolvent law passed. Some troubles respecting land titles occurred in consequence of the land office being closed during the minority of Richard and Thomas Penn, from the death of their father to the year 1732. Vacant lands were occupied without title by emigrants, frequently sold and resold, and great confusion was produced by a proclamation from the proprietary requiring payment under the penalty of ejection. Payments were procrastinated, warrants were vacated, resurveys were made, and a compromise was frequently effected as the only mode of avoiding trouble and difficulty.

On the breaking out of a war between Spain and Great Britain in 1739, Pennsylvania was called upon for her quota of men and money for the general defence of the colonies. The assembly refused on the ground of religious scruples, and further stated that the colony, being so remote from the sea, was not likely to be attacked by the enemy. They, however, voted three thousand pounds for the use of the king; but subject to such conditions that the governor refused it, and raised money by the sale of bills on the English government. Many other subjects of difference arose between the governor and the assembly, which at last grew to such a height as seriously to impede the public business. In order to sustain himself and his party, the governor removed from office those persons who were opposed to his views; a precedent which seems to have been followed by the governors of this State to the present day. The effect of this practice upon the public good is, however, questionable as to its benefit; for the rewarding of party services by appointments to office must always incite men to become partizans for the sake of office, and men of merit, integrity, ability and purity of character must be sacrificed to make room for party favourites, even of notorious incapacity or of doubtful honesty.

At the election of 1742, the two parties prepared for a trial of strength. The Quaker or country party was most powerful in the counties; while the friends of the governor, or *gentlemen's* party, were strongest in the city. As some of the proceedings relative to this election bear considerable resemblance to those of our own times, we shall describe them more particularly than would otherwise be necessary. The freemen of the whole county of Philadelphia, held their election at the court house in Market street, and the inspectors were chosen in the morning by the voters assembled. The country party collected to the number of a thousand, a great number of them being Germans, and proceeded to nominate their candidates for inspectors. The governor's party offered to divide the number of inspectors equally, but this was refused on the

ground that they had no right to control the votes of the people. The country party, in order that no violence might ensue on their part, and that every appearance of force should be taken away, resolved that not even those who commonly carried canes should take them to the polls. Many of the Germans, however, who were attached to this party were aliens, and the friends of the governor feared violence from them. On the morning of the election a party of about seventy sailors, strangers, from the ships in the river, paraded the streets in a noisy and riotous manner. The magistrates were solicited to check them, but declined; and it was said that the presence of the sailors at the polls was as proper as that of the alien Germans. It was also intimated by the recorder that any trouble or riot which might occur would be chargeable to the country party, in consequence of their having refused to compromise in the choice of inspectors. On proceeding to choose inspectors, William Allen was proposed to the assembled voters, but was rejected, and Isaac Norris was chosen. Immediately the sailors rushed up, and attacking the voters with clubs, cleared the ground. When the polls were afterwards opened for the general election, they took possession of the steps which led to the place of voting, and attempted by violence to prevent the country party from approaching, many of whom were beaten and wounded. The patience of the countrymen being at last exhausted, they opposed force to force, and finally beat off the sailors, about fifty of whom, with their leaders, Captains Mitchell and Redmond were imprisoned. The election now proceeded quietly and the country party were successful, electing all their members of the former house of assembly. The circumstances of this riot were afterwards investigated by the assembly, and it was strongly presumed that the governor's party had incited the sailors to their violent and disorderly conduct. Among other circumstances, it appeared that money had been promised, and advanced to them in the prison; and that some unknown persons had engaged them to beat off the Quakers and Germans from the election ground. The assembly sent an address to the governor praying that he would order a trial of the mayor, recorder and other city officers before the Supreme Court; but this was refused, because, as he alleged, the mayor's court alone had jurisdiction of offences committed in the city. The assembly then passed a resolution of censure on the chief officers of the police, and the affair ended.

The indirect hostilities between France and England in 1743-4, caused much trouble and anxiety in Pennsylvania. The Indians, incited and stirred up by French agents and traders from Canada, were becoming troublesome on the border settlements. The militia of Lancaster county were organized and disciplined by the governor, and other precautionary measures adopted. On the war being declared between these two European powers in March 1744, serious apprehensions of French invasion were entertained; the able bodied men of the province were ordered to prepare arms and train for military service. Benjamin Franklin distinguished himself on this occasion, and chiefly by his exertions, a body of

ten thousand volunteers was raised: a battery was also erected below the city, from funds raised by lottery.

Much dissatisfaction existed among certain tribes of Indians at the encroachments of the white settlers upon their lands. The country south of the Kittatiny or Blue mountain, had previously to this time been by various treaties sold by the Indians to the proprietaries; but the Delaware Indians refused to relinquish the country between the Lehigh and the Delaware, and it is said that the proprietor complained of them to the Five Nations to whom they were subject. A treaty was held in 1736, by which the right of the whites to the country as far as the Kittatiny was confirmed; and in 1742, another, at which the Six Nations compelled the Delawares to remove from the disputed territory, which they did, and went to Wyoming, Shamokin, and some to Ohio. In 1749, for five hundred pounds, the Indians sold the country on the east side of the Susquehanna, from the Blue mountain upwards as far as the mountain on the north side of Mahanoy creek, and thence by a line to the mouth of Lackawaxen on the Delaware.

The white people had made settlements on the Juniata, at which the Indians were much displeased; and the French emissaries used their influence to heighten the jealous feeling. A treaty was held at Albany in 1754, by order of the king, with the Six Nations, at which they granted in consideration of four hundred pounds, to Thomas and Richard Penn, "all the lands lying within the province of Pennsylvania, bounded as follows: beginning at the Kittochtinny or Blue hills, on the west of Susquehanna river, and thence by the said river a mile above a certain creek called *Kayarondinagh*, (now Penn's creek,) thence northwest and by west as far as the said province of Pennsylvania extends, to its western lines or boundaries; thence along the said western line to the south line or boundary of the province, and thence by the said south line or boundary to the said Kittochtinny hills, thence by the south side of said hills to the place of beginning."

This large grant, which included the dwellings of the Shawanese and others, as well as the hunting grounds of the Delawares, Nanticokes and Tuteloes, so much increased the discontent that many of the tribes openly joined the French. The design then entertained by the French government of opening a communication by a line of armed posts between Canada and Louisiana was vigorously prosecuted. Forts were erected at Presque isle, (now Erie,) on French creek, and at the junction of the Allegheny and Monongahela rivers. The governor of Virginia, who regarded the establishment of these outposts as an act of aggression on the English colonies, resolved to remonstrate with the French commandant on the Ohio. As the bearer of his despatches he selected Major George Washington, then not twenty years of age, but who gave promise in youth, of those qualities which afterwards rendered him so nobly conspicuous. After a hazardous and toilsome journey in the depth of winter, Washington returned with an answer in which the French officer stated that he was acting under the orders of the governor of Canada, and should maintain

his position. This defiance roused the spirit of Virginia, and Washington was sent with three hundred men in advance, as far as the Great Meadows, where he met with and defeated a party of French and Indians. The remainder of the regiment coming up, they advanced to dislodge the French from Fort du Quesne, which was built on the spot where Pittsburg now stands. They soon received intelligence that a force of twelve hundred French and Indians were on the way to meet them, and being short of provisions they determined to retreat to the Great Meadows where a stockade was hastily erected and called Fort Necessity. This spot is yet to be seen, near the national road, in the southeast of Fayette county. Before the fort was finished Washington was attacked, and after a most gallant resistance was forced to capitulate, his men being allowed to retain their arms and baggage and to return home unmolested.

The expedition of General Braddock followed, to which the assembly of Pennsylvania, though from alleged conscientious scruples they gave no direct encouragement to the raising of troops, yet contributed funds for the purchase of provisions; and through the exertions of Dr. Franklin, then Post Master General, one hundred and fifty wagons and two hundred and fifty pack horses were obtained for the use of the army, chiefly in Lancaster, York and Cumberland counties. Braddock was posted at Fort Cumberland, near the junction of Will's creek with the Potomac, in the western part of Maryland. In June, 1755, he broke up his camp, and crossed the mountains at the head of two thousand two hundred men, cutting a road for their passage through the wilderness. This road is yet in many places distinctly visible, and pursues for many miles nearly the same route as that occupied by the present national road. Having reached the Little Meadows, Braddock, by the advice of Washington who accompanied him, left a portion of his force with the heavy artillery and stores, and pushed forward with one thousand two hundred men and twelve pieces of cannon. Though repeatedly advised by Washington and the other provincial officers to scour the woods and guard against surprise, he rejected their counsel with scorn, and asserted the superiority of his military knowledge over that of the American *buckskins*. His foolish confidence and reckless disregard of the mode of Indian warfare was destined to a speedy and fatal reproof. On the 9th of July he was suddenly attacked by a strong force of French and Indians, who, concealed behind trees and bushes, poured in a well directed and destructive fire, by which his troops were thrown into confusion. Their bravery was ineffectual against an invisible enemy, who from rocks and trees and high grass took sure aim at the officers and men, without being themselves perceived. The slaughter was dreadful, and Braddock himself was mortally wounded. The British regiments, unaccustomed to this mode of fighting, could not be rallied; but the provincial troops stood their ground and under Washington covered the retreat of the survivors. Braddock lived until the remains of the army had reached about forty miles from the field of battle,

where he was buried, as is reported, in the middle of the road which he had cut. To prevent the Indians from discovering his grave, it is said that the troops, horses and wagons were passed over it. The spot was marked by the soldiers, and is still to be seen a little north of the national road, about ten miles east of Uniontown.

The defeat of Braddock's army spread consternation and dismay throughout Pennsylvania. The retreat of the remaining portion of the army under General Dunbar to Philadelphia, left the whole western frontier exposed, and the Indians falling upon the defenceless inhabitants committed, at will, the most savage cruelties and wanton destruction. They first attacked the settlers in Cumberland county, and next those east of the Susquehanna at Tulpehocken, Mahony and the Moravian village of Gnadenhutten which was burned and destroyed. The near approach of danger aroused the authorities of the province to provide for defence. The settlements on the Juniata had been wasted by the enemy, and such of the people as did not escape, were either killed and scalped, or taken prisoners. To guard against the marauding parties of French and Indians who infested the country north of the Kittatiny mountain, a line of defence, consisting of forts and block houses was constructed along it from the Delaware river to Maryland. The patriotic Franklin was conspicuous for his services in this hour of danger. Men were marched to garrison the forts, Bethlehem was put in a state of defence, and twelve hundred men, with a company of artillery, were raised in the city, formed into a regiment and Franklin chosen as colonel.

Still, however, war had not been declared by the province against the Indians. Though the Delawares and Shawanese had committed hostilities, the assembly relied upon the influence of the Six Nations over them, and the friendly relations which had so long existed between these people and the Quakers were not yet forgotten. The assembly was moved to address the governor, and request him to suspend his declaration of war, but without effect; he proclaimed it by the advice of his council, with but one dissenting voice. The Quakers in the assembly were much blamed and suffered much trouble on account of their pacific principles; but though declining any exertion to procure their election to that body, many of them were chosen by the people, sometimes, perhaps, with a view of escaping taxes and military service.

In August 1756, an expedition was undertaken under the command of Colonel Armstrong against the Indian town of Kitataning, on the Alleghany, which was taken and burned after an obstinate conflict. Eleven English prisoners were released and a large quantity of powder and goods, which had been given to the Indians by the French, was destroyed.

The Indians on the Susquehanna and in other parts of the province having generally become desirous of peace, a treaty was held at Easton, in August 1757, at which the representatives of ten tribes attended. They not only agreed to a treaty of peace, but resolved to take up arms against the French. The western

Indians, however, still under the French influence, and supplied with arms, powder and goods from Fort du Quesne, continued to roam in small parties over the province, keeping the settlers in continual alarm and apprehension. All out-door labour was performed with arms at hand, or under an armed guard; and the tomahawk and rifle of the savage was used without mercy. The unprotected dwelling was attacked and burned, women and children were butchered and scalped; while the savage enemy, avoiding the forts and armed bands of the settlers, even advanced some of these prowling war parties, it is said, to within thirty miles of Philadelphia.

The capture of Fort du Quesne was now resolved upon, and in July 1758, General Forbes marched from Carlisle with a strong force. He proceeded by way of Raystown and Loyalhanna, at which latter place an advanced division under Colonel Bouquet had been attacked by the French and Indians. These having retired, the general advanced towards Fort du Quesne, but before his arrival the French had destroyed and abandoned it. The ruined fortifications were repaired, and a garrison being left, the main body of the army returned to the eastern counties. The surrender of Canada to the English in 1760, put an end to the war.

A season of peace and tranquillity was now hoped for; but it was of short duration. A secret league was formed among the tribes on the Ohio, and the border settlements were to be simultaneously attacked. The frontiers of Pennsylvania, Maryland and Virginia were overrun and plundered by scalping parties; the forts at Venango, Le Boeuf and Presque isle being weakly manned were taken and the garrisons murdered. In the summer of 1763, the whole country west of Shippensburg was at the mercy of the savages. The people quit their farms and flocked to Shippensburg, Carlisle, and other towns for protection. Fort Ligonier, west of the mountains, still held out, though besieged by the enemy, and Colonel Bouquet was despatched by General Amherst to relieve it. He marched from Carlisle in July, the enemy retired on his approach, but attacked him at Turtle creek, on his advance to Fort du Quesne, where he escaped the fate of Braddock only by superior skill in the method of Indian warfare. He completely routed and dispersed the assailants, with the loss of fifty men and many horses, and was obliged to destroy a large portion of his provisions. Four days afterwards he reached Fort du Quesne, then named Fort Pitt; the Indians having retreated to their remote settlements.

In the following winter the frontiers were again harassed by the Indians. Some of the Delawares and Six Nations who remained among the whites, professing neutrality, became suspected of aiding the enemy; and a party of armed settlers, chiefly from Paxton, or *Paxtang*, township, Lancaster county, in December 1763, attacked an Indian village near Conestoga, barbarously killing old men, women and children. The Indian men were mostly absent at the time, and were placed for protection in the

prison at Lancaster. The prison was forced, and the miserable Indians were killed, protesting their innocence and their love for the English. The magistrates of the town seem to have taken no measures to prevent this outrage. The governor afterwards issued a proclamation offering a reward for the discovery of the perpetrators, but without effect.

The Indians who remained, being alarmed by these hostile demonstrations, were desirous of proceeding to the province of New York; but the governor there refusing permission, they were taken to Philadelphia for their security. Their enemies in Lancaster county, however, being determined to expel them, assembled in great numbers and marched for the city. The governor prepared for defence, cannon were mounted, and the approaches to the city placed under strong guards. The insurgents proceeded to Germantown, and finding the strength of the preparations made to oppose them, forbore the attack upon the city, and by the advice of some prudent persons who visited them, sent two of their leaders to the governor and assembly with a memorial, which was referred to a committee; the excitement subsided and the affair terminated.

John Penn, one of the proprietaries was now governor of Pennsylvania. Further supplies were necessary for the support of the war against the western Indians; the quota of men to be furnished by Pennsylvania was one thousand, which the assembly resolved to raise, and to maintain it they voted £50,000. Difficulties, however, arose between them and the governor respecting the mode of taxation and other subjects, which gave rise to a long and bitter controversy, which was carried to such a height that the assembly at last resolved to take measures for effecting a change in the government. Petitions to the king for that purpose were presented, and agents were sent to England for the purpose of obtaining a change of the government from proprietary to royal.

In 1764 all the American colonies were thrown into agitation by the avowed design of the British government to raise a revenue from them by taxation. The indignation was universal, and Pennsylvania stood with her sister provinces in opposition to the odious measure. Dr. Franklin was sent to England as agent for the province, and laboured earnestly to avert the dangerous experiment of taxing the colonies. The stamp act was, however, passed in March 1765, and was one of the leading causes which, not many years after, produced that revolution which separated the colonies from the mother country.

At the treaty of Fort Stanwix, in 1768, another large purchase of land was made from the Indians. In consideration of \$10,000, the chiefs of the Six Nations there assembled, granted to Thomas Penn and Richard Penn all that part of Pennsylvania not previously purchased within the following limits: beginning at the boundary line of the province, on the east branch of the Susquehanna at a place called *Owegy*, and running with the boundary line, down the east branch, to the mouth of a creek called *Arcon-*

dac or *Tuwandee*. Thence up the said creek and along the hills called *Burnett's* hills to the head of a creek which runs into the west branch of the Susquehanna, which creek is called by the Indians *Tiadaghton*, (Pine creek,) and down the said creek to the west branch of the Susquehanna, and up the same to the fork which lies nearest to *Kittaning*. (This fork is now called *canoe place*, or the Cherry Tree, being, it is said, the farthest point to which a canoe could be pushed up the west branch: it is at the northwest corner of Cambria county.) From this the line of purchase ran straight to Kittaning and thence down the Allegheny and Ohio rivers to the western boundary of Pennsylvania, and along it to the southern boundary which limited the purchase on the south as far eastward as the "Allegheny hills." Thence along east of said hills to the west line of the former purchases, and north of them to the mouth of *Lechawachsein* (Lackawaxen) creek on the Delaware, then up the Delaware to an east line from *Owegy*, and along it to the place of beginning at Owegy.

By tracing the lines of this purchase on the map, it will be seen that it included the whole of the lands in the province not before purchased, with the exception of a large tract in the northwest which continued to be Indian ground until after the revolution. In 1784, this was also purchased from the Six Nations; and thus, in a period of about one hundred and two years, was the whole Indian title within the bounds of Pennsylvania extinguished.

But though the Indian title was thus peaceably extinguished, a dispute arose among the white settlers themselves respecting a portion of these lands, which finally assumed a serious aspect and led to violence and bloodshed. A number of settlers from Connecticut had established themselves at Wyoming, and the "Susquehanna Company" of that province claimed a large tract in the north and northeast of Pennsylvania as belonging to Connecticut, the charter of which, it was asserted, covered the country from the Atlantic to the Pacific ocean. In 1761 some emigrants from Connecticut established themselves on the Delaware in Northampton county, (now Pike and Wayne) and in 1762 others settled at Wyoming. The government of Pennsylvania remonstrated against their claims and encouraged Pennsylvania settlers to occupy these lands. A large body accordingly proceeded to the Susquehanna, and soon came into collision with the people from Connecticut. Open war was the consequence: forts were erected, besieged and taken; and at last the Connecticut settlers, persisting in their claims, the sheriff of Northumberland county was sent with a body of near five hundred men to dispossess them. His party was, however, beaten off and compelled to retire. Seeing that forcible ejection of the intruders must be followed by much bloodshed and misery, Pennsylvania forbore further hostilities. The right of jurisdiction to the disputed territory, was not settled until after the revolution, when it was determined in favour of Pennsylvania by commissioners appointed by Congress. The rights of territory were afterwards settled between the Pennsylvania and Connecticut claimants by the laws of Pennsylvania.

In 1774 a contest arose with the governor of Virginia in relation to the western boundary. The fort at Pittsburg had been seized by an agent of Lord Dunmore, under the pretence that it was within the Virginia boundary; land titles were contested and troubles with the Indians ensued.

But these domestic difficulties were soon to be absorbed by a question of much greater consequence. The determination of the British government to tax the colonies and to infringe their rights by various acts of oppression, had at length driven the American provinces to open resistance. The spirit of freedom was aroused, public meetings were held, delegates to a general Congress were chosen, and in 1776 that memorable declaration was signed by which the United States of America became an independent nation.

The limits to which we are confined in this brief sketch of the history of Pennsylvania will not allow us to describe those incidents of the revolutionary war in which this state was more immediately concerned. These belong rather to the general history of the United States, and will be found fully detailed in the several works which have been written upon that subject.

The Congress of 1776 having recommended the formation of new state governments, and the colonial assembly being regarded as deriving its power under the authority of the crown, a provincial conference assembled at Philadelphia in June, which recommended the calling of a convention for the purpose of framing a constitution for the government of the state, under the authority of the people. This convention, consisting of eight members from each county, elected by the people, met on the 15th July, 1776, and chose Dr. Franklin president. The constitution was completed in convention, and signed September 28th. The state continued under its government until 1790, when another convention was called, and another frame of constitution agreed upon, under which Pennsylvania remained until 1838. In 1836 the people of the commonwealth determined by a majority of votes in favour of calling a convention to amend the constitution, and in 1837 elected members to the convention who assembled at Harrisburg, and afterwards adjourned to Philadelphia, where, on the 22d of February, 1838, the present constitution of the state was signed, and at the election in October of the same year, was adopted by the votes of a majority of the people.

Since the revolution, the history of Pennsylvania has become merged in that of the United States, and from that period we have no separate account of the leading public events which more immediately relate to this state. A work upon the recent history of Pennsylvania, in continuation of those which have been written concerning its earlier periods, is much to be desired, and ample materials exist for such an undertaking. It is hoped that this will be attempted by some one of the many whom we have among us well qualified for such a task, and that it will not be long before this defect in the annals of our state will be fully supplied.

Governors, Deputies, Presidents, &c., of Pennsylvania.

1682, October, William Penn, proprietor, acted as Governor until

1684, August, Thomas Lloyd, President.

1688, December, Capt. John Blackwell, Deputy Governor.

1690, February, President and Council.

1693, April 26, Benjamin Fletcher, Governor.

“ June 3, William Markham, Deputy Governor.

1699, December 3, William Penn, again Governor.

1701, November 1, Andrew Hamilton, Deputy Governor.

1703, February, President, Edward Shippen, and Council.

1704, February, John Evans, Deputy Governor.

1709, February, Charles Gookin, Deputy Governor.

1717, March, Sir William Keith, Deputy Governor.

1726, June, Patrick Gordon, Deputy Governor.

1736, June, James Logan, President, and Council.

1738, June, George Thomas, Deputy Governor.

1747, June, Anthony Palmer, President.

1748, June, James Hamilton, Deputy Governor to June 1754.

1754, October, Robert Hunter Morris, Deputy Governor.

1756, August 19, William Denny, Deputy Governor.

1759, November 17, James Hamilton, Deputy Governor.

1763, October 31, John Penn, son of Richard Penn.

1771, May 6, James Hamilton, President, and Council.

“ October 16, Richard Penn, Governor.

1773, August, John Penn, second time Governor to September 1776.

Revolution.

1777, March, Thomas Wharton, Pres. of Sup. Exec. Council.

1778, October, Joseph Reed, do.

1781, November, William Moore, do.

1782, November, John Dickinson, do.

1785, October, Benjamin Franklin, do.

1788, October, Thomas Mifflin, do.

Governors under the Constitution of the State.

Elected,		Elected,	
1790, October, Thomas Mifflin.		1817, “ William Findlay.	
1793, “ do.		1820, “ Joseph Hiester.	
1796, “ do.		1823, “ John Andrew Shulze.	
1799, “ Thomas McKean.		1826, “ do.	
1802, “ do.		1829, “ George Wolf.	
1805, “ do.		1832, “ do.	
1808, “ Simon Snyder.		1835, “ Joseph Ritner.	
1811, “ do.		1838, “ David R. Porter.	
1814, “ do.		1841, “ do.	

When, where, and by whom, were the earliest settlements made in Pennsylvania? Under whose dominion did the territory afterwards fall by successive conquests? What is said of William Penn? By whom, and

for what consideration was Pennsylvania granted to him? What were the provisions of the charter? At what rate did he offer the land to purchasers? When and where did the first English emigrants land? When did Penn himself arrive? Where did the first assembly meet, and what laws did they pass? At what place was a treaty made with the Indians, and what is said of it? What is said of the beginning of Philadelphia? From what countries did other emigrants arrive, and where did they settle? When did Penn return to England and how did he leave the government? What is said of his trouble and difficulties? What change was made in the government, and when was it restored to him? Relate the circumstances of his second visit and his causes of trouble. What was his dispute with Lord Baltimore, and how finally settled? What were the provisions of his new frame of government, and what was done by the three lower counties? In what year did he return to England, how did he dispose of the government, and when did he die? To whom did he leave his interest in Pennsylvania, and what was afterwards done with it? What is said of the arrival of emigrants, and where did they settle? When did Thomas and John Penn visit the province? What is said of the administration of Governor Gordon? What occurred on the breaking out of war between Spain and Great Britain? What was the effect in Pennsylvania of the war between France and Great Britain, and what was done by Dr. Franklin? Mention the subjects of dispute with the Indians about lands. What extent of country was sold by them in 1749, and for how much? And by the treaty at Albany in 1754? What was the consequence of this large grant of land? Where were forts erected by the French? Who was sent by the governor of Virginia to remonstrate with the French commandant? What was done afterwards in consequence of the answer received? Relate the circumstances of Washington's expedition and surrender. In what year was the expedition of Braddock, and what were the events attending it? Describe the circumstances of his defeat. What was the effect of this in Pennsylvania, and what outrages by the Indians followed? What measures of defence were taken? Relate the events of Colonel Armstrong's expedition. What was done at the treaty of Easton, and what was the conduct of the western Indians? Describe the circumstances of the expedition of General Forbes. When and by what cause did the war terminate? What Indian troubles afterwards occurred? Relate the particulars of the attack upon the friendly Indians near Conestoga. Who was now governor of the province, and why did the assembly resolve to change the government? What was the feeling in Pennsylvania on the intention of the British government to tax the colonies? When was the stamp act passed and what was the effect? Describe on the map the extent of land purchased from the Indians in 1768. When was the remainder of the State purchased from them? What led to the disputes with the settlers from Connecticut? What occurred in consequence, and how was the matter finally settled? On what subject was there a dispute with Virginia? What was the consequence of the determination of the British government to tax the colonies? Relate the circumstances attending the formation of the first State constitution. When was another constitution agreed upon, and how long did it remain in force? What was done in 1836-7, in relation to amending it, and when was the present constitution signed and adopted by the people?

GEOGRAPHY OF PENNSYLVANIA.

PART I.—OF THE STATE IN GENERAL.

1. BOUNDARIES, EXTENT, AND POLITICAL DIVISIONS.

PENNSYLVANIA is bounded on the north by New York and Lake Erie; on the east by the Delaware river, which separates it from New York and New Jersey; on the south by Delaware, Maryland and Virginia; and on the west by part of Virginia and Ohio.

Its shape is almost a perfect parallelogram; its northern and southern sides being marked by parallels of latitude and its western by a meridian. It extends from $39^{\circ} 42'$ to $42^{\circ} 15'$ of north latitude, and from $2^{\circ} 18'$ E. to $3^{\circ} 32'$ W. longitude from Washington, or from $74^{\circ} 44'$ to $80^{\circ} 34'$ W. from Greenwich, near London. Its length is about three hundred and ten miles and its breadth one hundred and sixty; containing nearly forty-seven thousand square miles, or 30,080,000 acres of land.

This State is divided into fifty-eight counties, the names of which are exhibited in the following table, with the section of the State in which they are situated, the dates of their formation, the several county towns, and their distance from Harrisburg, the seat of the State government.

<i>Counties.</i>	<i>Situation.</i>	<i>When formed.</i>	<i>County town.</i>	<i>Miles from Harrisburg.</i>
— Adams	South	1800	Gettysburg	34
— Allegheny	West	1788	Pittsburg	200
Armstrong	West	1800	Kittaning	183
Beaver	West	1800	Beaver	230
Bedford	South	1771	Bedford	105
Berks	East	1752	Reading	52
Bradford	North	1810	Towanda	128
Bucks	Southeast	1682	Doylestown	107
Butler	West	1800	Butler	203
Cambria	Middle	1804	Ebensburg	131
Carbon	East	1843	Mauch Chunk	99
Centre	Middle	1800	Bellefonte	85
Chester	Southeast	1682	West Chester	75
Clarion	West	1839	Clarion	184
Clearfield	Middle	1804	Clearfield	129
Clinton	Middle	1839	Lock Haven	110
Columbia	Middle	1813	Danville	65
Crawford	Northwest	1800	Meadville	236
Cumberland	Middle	1750	Carlisle	18
Dauphin	Middle	1785	Harrisburg	—
Delaware	Southeast	1789	Chester	95
— Erie	North	1843	—	—

<i>Counties</i>	<i>Situation.</i>	<i>When formed.</i>	<i>County town.</i>	<i>Miles from Harrisburg.</i>
Erie	Northwest	1800	Erie	272
Fayette	Southwest	1783	Uniontown	184
Franklin	South	1784	Chambersburg	49
Greene	Southwest	1796	Waynesburg	222
Huntingdon	Middle	1787	Huntingdon	90
Indiana	West	1803	Indiana	157
Jefferson	Northwest	1804	Brookville	165
Juniata	Middle	1831	Mifflin	43
Lancaster	South	1729	Lancaster	36
Lebanon	Middle	1813	Lebanon	24
Lehigh	East	1812	Allentown	85
Luzerne	Northeast	1786	Wilkesbarre	114
Lycoming	North	1795	Williamsport	87
M'Kean	North	1804	Smethport	200
Mercer	West	1800	Mercer	235
Mifflin	Middle	1789	Lewistown	55
Monroe	East	1836	Stroudsburg	120
Montgomery	Southeast	1784	Norristown	88
Northampton	East	1752	Easton	101
Northumberland	Middle	1771	Sunbury	52
Perry	Middle	1820	Bloomfield	36
Philadelphia	Southeast	1683	Philadelphia	100
Pike	Northeast	1814	Milford	157
Potter	North	1804	Coudersport	174
Schuylkill	Middle	1811	Orwigsburg	59
Somerset	South	1795	Somerset	143
Susquehanna	Northeast	1810	Montrose	163
Tioga	North	1804	Wellsboro	147
Union	Middle	1813	New Berlin	60
Venango	Northwest	1800	Franklin	212
Warren	Northwest	1800	Warren	240
Washington	Southwest	1781	Washington	212
Wayne	Northeast	1798	Honesdale	165
Westmoreland	Southwest	1773	Greensburg	170
Wyoming	Northeast	1842	Tunkhannock	142
York	South	1749	York	25

Boundaries, Extent, &c.

How is Pennsylvania bounded? Between what parallels of latitude and meridians of longitude is it situated? What is its length and breadth? Its area in square miles and in acres? Into how many counties is it divided?

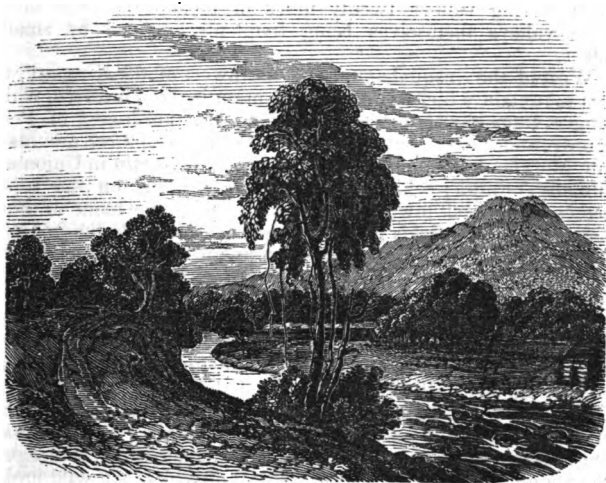
2. FACE OF THE COUNTRY : MOUNTAINS, HILLS, &c.

THE surface of Pennsylvania presents a highly varied aspect, and the traveller who delights in changes of scenery will find much to admire as he passes through this State. The wild and rugged mountain, the woody hill, the fertile valley, the fruitful field and the verdant meadow, will claim his attention in endless and varied succession; forming a broad landscape of boundless variety and ever changing beauty.

There are few large tracts of level land in the State, and though the southeastern counties cannot be strictly termed hilly, yet the surface is undulating and variable. Some elevated ridges of trap

rock are found in the counties of Bucks and Montgomery, as also in Lancaster, York and Adams. The *South mountain* is the first range of any considerable magnitude in this portion of the State: it passes from the Delaware, below Easton, through Northampton, Lehigh and Berks; continuing between Lancaster and Lebanon, York and Cumberland, Franklin and Adams counties, to the Maryland line. Crossing the Potomac at Harper's Ferry, into Virginia, it is there called the Blue ridge. On the north of this chain we have a comparatively level valley of limestone, stretching entirely across the State, with a slate region on the north of it, which is more hilly.

Next to this the *Kittatiny* or *Blue mountain* lifts its long, regular and almost level crest line of summit, to the height of from seven hundred to twelve hundred feet above the level of the streams at its base. This ridge extends from the Delaware Water Gap to near Loudon, in Franklin county, where it terminates in a high picturesque elevation, called Parnell's Knob.



Parnell's Knob.

North of the Blue mountain, and between the Lehigh and Susquehanna, is the wild mountainous region where the anthracite coal is found. Here are high and barren ridges, in constant and close succession, stretching across this solitary and almost uninhabited waste, or winding around, and connecting with each other, as they enclose the long narrow pointed valleys. The *Second* and *Sharp* mountains are between the Kittatiny and the first coal basin; then we have the *Broad* mountain, a huge irregular elevation, with a broad barren table land on its top, almost

destitute of timber, and presenting a fearful picture of wild sterility and desert solitude.

East of the Susquehanna are the high ridges known by the names of *Peter's*, *Berry's*, *Bear*, *Mahontongo* and *Mahanoy* mountains; and further northeast, towards the Lehigh, are *Buck*, *Spring*, *Green*, *M'Conley's* and *Nescopeck* mountains; the latter being prolonged nearly to the North branch of Susquehanna, is called, at its western end, the *Catawissa* mountain. Beside those already mentioned, there are other ridges and peaks, which may be more appropriately noticed in our description of these counties.

The valley of Wyoming is enclosed by a lofty chain of mountains, known by many local names: the principal are the *Wyoming* and *Moosick* on the east, and the *Shickshinny*, *Shawney* and *Capous* on the west.

That vast and complicated series of mountains which stretches between the Kittatiny or Blue mountain and the Allegheny, has been called the *Appalachian* chain. It consists of high and nearly parallel ridges, sometimes quite near to each other, and at other times having valleys twenty miles in breadth between them; these valleys themselves being frequently divided by smaller ridges.

West of the Susquehanna, and northwest of the Kittatiny, the first mountain which claims our attention is the *Tuscarora*, which ranges from the Juniata river along the northwest of Perry county, and thence southward, under the name of *Cove* mountain, into Maryland. Beyond this is the *Shade* mountain in Union and Juniata counties; which, folding sharply round on the south, passes again back towards the Juniata under the name of *Black Log* mountain. *Jack's* mountain rises near New Berlin, in Union county, and, pursuing a southwestward course, crosses the Juniata below Huntingdon, and stretches southward nearly to Bedford county.

The long range called *Sideling hill* passes from Maryland northward through Bedford and Huntingdon counties, extending nearly to the Juniata, west of Jack's mountain, below the town of Huntingdon; where, folding round the north end of Trough Creek valley, it passes again southward up the Raystown branch of Juniata, under the name of *Terrace* mountain. Between *Sideling hill* and the Raystown branch is the broad elliptical irregular elevation called *Broad Top*, the summit of which is a wild broken region containing bituminous coal. This lies partly in Bedford and partly in Huntingdon counties. Further south are *Harbour* mountain, *Ray's hill*, &c.

Beyond Jack's mountain, on the west of Mifflin county, and north of Huntingdon, we have the *Stone* and *Path* mountains; next to which is *Tussey's* mountain, running from the southeast of Centre county, and extending southward through Huntingdon and Bedford counties to the southern line of the State. Further northwest, in Centre county, are *Brush*, *Nittany* and *Bald Eagle* mountains. *White Deer* mountain forms part of the south line of Lycoming county.

The *Bald Eagle* mountain extends along the south side of the West branch of Susquehanna to the mouth of Bald Eagle creek, being there called *Muncy* mountain, and then up that stream on the southeast, reaching nearly to the Juniata, where it is again called *Brush* mountain. The same range proceeds by a winding course further southward into Bedford county, being known by different names, such as *Canoe* mountain, *Lock* mountain, and *Dunning's* mountain. Beyond these there is no important ridge until we come to the great Allegheny, except in the southwest part of Bedford and the southeast of Somerset counties; where we have some high ridges extending northward from Maryland, west of Tussey's mountain, called *Everts'*, *Will's*, *Little Allegheny* and *Savage* mountains.

That elevated range which extends nearly across the whole of the State under the name of the *Great Allegheny* mountain is not, like most of the others which we have described, a high bold ridge with a steep ascent on both sides. It is more properly the steep southeastern front or escarpment of a high table land, which, on the northwest and west, has a scarcely perceptible descent; being a high undulating surface, gradually declining westward. The Allegheny mountain is first perceptible on the North branch of the Susquehanna, about thirty miles above Wilkesbarre, where it is called *Tunkhannock* mountain. It then ranges westward through Luzerne and the north part of Columbia counties, being there called the *North* mountain; passes through Lycoming county and crosses the West branch near Farrandville, above the mouth of Bald Eagle creek. It is now known by the name of Allegheny, and passes through Clinton and Centre to the northwest corner of Huntingdon county. Still ranging on to the southwest, it forms the line between Huntingdon and Cambria, Bedford and Somerset counties, until, passing across the southeastern part of Somerset, it enters the state of Maryland.

Still west of the Allegheny we have, between Somerset on the east and Fayette and Westmoreland counties on the west, a high ridge called *Laurel hill*, which gradually sinks away on the north and terminates in Cambria county. Beyond this, coming into Fayette county from Virginia, is *Chestnut ridge*, sometimes erroneously also called Laurel hill in its southern part near the State line. This ridge extends through Fayette and Westmoreland into Indiana county, where it also terminates on the north.

Most of the country west of the Allegheny mountain is hilly; but the hills are abrupt and irregular—not owing to the disturbance or upheaving of great lines of rock strata, like the Appalachian mountain ridges, but being caused principally by the action of the streams, which have worn deep ravines along their courses. Many of these hills are steep and precipitous, some of them several hundred feet in height, and the whole region is intersected in every direction by these deep channels and valleys of denudation. The rock strata appear along their sides in a nearly horizontal position, and it is a very common occurrence to observe a coal seam high in the hill side along one of these deep valleys, with its

counterpart on the opposite hill at about the same height; thus showing conclusively that the valley has been worn down by the action of the waters.

Face of the country, mountains, &c.

What is said of the general face of the country in Pennsylvania? Of that in the southeastern counties? Describe the situation and extent of the South mountain. Of the Kittatiny or Blue mountain. What is the character of the country between the Lehigh and the Susquehanna? What mountains are mentioned? Name those east of the Susquehanna;—and those towards the Lehigh. What mountains surround the Wyoming valley? What is the general name of the chain between the Blue mountain and the Allegheny? Where is the Tuscarora mountain? Shade? Jack's? Sideling hill? Broad Top? Stone? Path? and Tussey's mountain? What mountains are in Centre county? Describe the range of the Bald Eagle mountain, and by what names is it called further southward? What ridges extend from Maryland into Bedford and Somerset counties? Mention the principal features of the Allegheny mountain. Describe its extent from northeast to southwest. What are the two principal ridges west of the Allegheny mountain? Describe the general character of the country west of the Allegheny. What has caused the deep channels between the hills?

3. RIVERS.

THE waters of almost every spring and brook in Pennsylvania find their way to the ocean through one or the other of its three great rivers, the *Delaware*, the *Susquehanna*, and the *Ohio*. Some small streams in a few of the southern counties run through Maryland into the Potomac; but only a very small portion of the state is drained by that channel. Most of our rivers and creeks have happily retained their original Indian names: a circumstance rather to be deemed fortunate when we consider the taste manifested by the early settlers in changing some of them to such names as Yellow breeches, Kettle creek, Bloody run, Bullskin, Big creek, Black hole and Bear wallow.

The *Delaware* received its present name from the English, being called by some tribes of Indians *Poutaxat*, and by others *Makeris-kitton*. This river rises in the state of New York, by several branches, which unite near the northeastern corner of Pennsylvania, and thence flowing southeastward, it forms the boundary line between this state and New York for about fifty miles to the northwestern corner of New Jersey. Here it turns southwestward, between Pennsylvania and New Jersey, and passes through the Blue mountain at the Delaware Water Gap. Here a magnificent view of sublime and grand natural scenery is presented. The mountain rising from one thousand to twelve hundred feet on either side, seems to have been torn asunder by the rushing waters, and towering rocky precipices rear their gray and naked summits almost perpendicular from the edge of the river. From the top of the mountain you see spread below you on the south, a boundless extent of landscape, stretching as far as the eye can reach

over the woody hills and cultivated plains of Pennsylvania and New Jersey, with the beautiful river in its winding and distant course gleaming in the sunlight like a broad band of polished silver. And this is but one of the many wild and magnificent scenes with which the interior of our State abounds. If those who quit, for a time, the toils of business in the city during the heat of summer, could consent to forsake their accustomed fashionable resorts at Cape May, Saratoga, and other crowded but uninteresting places, and take a ramble through the mountain regions of our own State, they would return with renewed health, gratified, delighted and improved by a more thorough knowledge of the beauties and resources of Pennsylvania.



Delaware Water Gap.

From the Water Gap the Delaware runs southward to Easton, where it receives the Lehigh. Its course is then towards the southeast as far as Trenton, where it again bends to the southwest, and passing Philadelphia, reaches the line of Delaware State twelve miles above New Castle. From this to the Delaware bay it separates the states of Delaware and New Jersey. The length of this river is upwards of three hundred miles. The tide flows up it to Trenton, about one hundred and fifty miles from the sea. It is navigable for large ships to Philadelphia, for sloops to Trenton, and for boats nearly one hundred miles further; but since the construction of the canal from Bristol to Easton, the trade by river boats has much declined. Above Trenton the river is obstructed by several rocky rapids, called falls; though when the water is high large quantities of lumber descend in rafts.

The principal streams falling into the Delaware from Pennsyl-

vania, are the Lackawaxen, the Lehigh, and the Schuylkill. The *Lackawaxen* is a small river which rises chiefly in Wayne county, and empties into the Delaware about twenty miles above the New Jersey line.

The *Lehigh* (*Lechay* of the Indians) is a wild, beautiful and rapid stream, flowing through a mountain region for many miles of its course, supplied by springs and lakes hidden in the deep and solitary recesses of the pine swamps and forests of Luzerne, Pike, and Monroe counties. Passing Mauch Chunk, its general course is southeastward to Allentown, in Lehigh county, where it turns abruptly eastward and flows along the northern side of the South mountain, until it meets the Delaware at Easton. Its length is about eighty miles. The coal and lumber trade on the improved navigation of this river is of great value and increasing importance.

The *Schuylkill* seems to have received its present name from the Dutch or Swedes: the Indians called it *Manaiunk*. It rises by several branches among the coal mountains of Schuylkill county, and flowing southeastward about one hundred and thirty miles, falls into the Delaware, five miles below Philadelphia. The tide flows up this river about six miles to the dam at Fair Mount water works, and it is navigable for vessels of considerable burthen to the western front of the city, where a large amount of coal is shipped.

The next great river of Pennsylvania, and the largest in the State, is the *Susquehanna*, which is formed by the union of two main branches at Northumberland. From this its course is southward to the mouth of the Juniata, where it turns a little more southeast and pursues a general course in that direction to the Maryland line, which it crosses, and empties into the Chesapeake bay below Havre de Grace. This river is diversified by many picturesque and beautiful little islands, and the scenery along its banks is of the most pleasing and varied character. Its breadth is very unequal, sometimes exceeding a mile, and then contracting between rocky cliffs to less than a quarter of a mile. The channel is much obstructed by rocky rapids, which prevent navigation except at high water. During the spring freshets, however, a vast quantity of lumber descends in rafts, and many arks laden with grain, flour, iron and other productions of the interior and northern counties.

The *North branch* of Susquehanna is formed by the junction of the East branch and Tioga rivers at Tioga Point, near the New York line. From this place its course is southeastward until it enters the Wyoming valley, ten miles above Wilkesbarre, where it receives the Lackawana, and turning to the southwest, continues that course to Northumberland.

The *West branch* of Susquehanna rises beyond the Allegheny mountain in Cambria and Clearfield counties, flows eastward and receives the Sinnemahoning, Pine creek (*Tiadaghton*) and other large streams from the north. The Bald Eagle creek empties into it from the south near Lock Haven. It continues an east-

ward course by Williamsport to Muncy or Pennsborough, where it bends to the south for some distance, then turns a little south-east, and unites with the North branch at Northumberland.

The *Juniata* has its sources in and near the Allegheny mountain, in Huntingdon and Bedford counties; its main streams being the Frankstown branch from the west, and the Raystown branch from the south. It is a very crooked river, winding among the mountains which rise boldly from its banks, and affording to the traveller some of the most picturesque and romantic views in Pennsylvania. Its general course is eastward, and it empties into the Susquehanna at Duncan's island, sixteen miles above Harrisburg.

Most of that portion of Pennsylvania which lies west of the Allegheny mountain is drained by the waters of the *Ohio*. The two main branches of this river, called the Allegheny and the Monongahela, unite at Pittsburg; from which the Ohio flows north-westward twenty-five miles to Beaver, where it receives Beaver river from the north; then bending southwestward, it passes out of Pennsylvania and continues between Virginia and Ohio.

The *Allegheny* river is the northern branch of the Ohio, and is formed by several tributary streams, some of which rise in the northern counties of Pennsylvania and others in the southwestern part of New York. From the State line, where it forms the boundary between Warren and M'Kean counties, its course is southwestward to Franklin in Venango county, where it receives French creek from the northwest; then turning southward, it is augmented by the waters of Clarion, Red Bank and Kiskiminetas or Conemaugh, which fall into it from the east, and, again bending southwest, it meets the Monongahela at Pittsburg.

The *Clarion* river runs from the northeastern part of Jefferson county, in a southwestern direction, until it empties into the Allegheny. The *Red Bank* passes nearly through the middle of Jefferson county, and running westward, forms the boundary between Armstrong and Clarion counties till it empties into the Allegheny. The *Conemaugh* rises on the western slope of the Allegheny mountain in Somerset and Cambria counties, runs a little north of west, and joins the Allegheny river near the south-east corner of Butler county.

The *Monongahela*, or southern branch of Ohio, flows northward from Virginia, and passes into Pennsylvania between Fayette and Greene counties. It has many bends in its course, but its general direction is northward, until it meets the Youghiogeny at M'Keesport, from which it runs northwest to Pittsburg.

The *Youghiogeny* comes from the western part of Maryland, crosses the State line, and running northward between Somerset and Fayette counties, unites with Castleman's river below Smithfield, from which its course is northwest to its junction with the Monongahela. *Castleman's* is a small river, rising in the southern part of Somerset county and running westward to the Youghiogeny.

The smaller streams will be noticed in our description of the several counties in which they are situated.

Through what great rivers do the waters of Pennsylvania find their way to the ocean? Where does the Delaware rise, and what is its course to the Water Gap of the Blue mountain? From this to the southern line of the State? What is its length, and how far up does the tide flow? What is said of its navigation? Name the principal branches of the Delaware. What is said of the Lehigh, of its course and length? Give a general description of the Schuylkill. Of the Susquehanna from Northumberland to Chesapeake bay. What is said of its navigation? Describe the North branch. The West branch. Where does the Juniata rise? What is its course, and where does it empty? What are the two main branches of the Ohio, and where do they unite? Mention the rise and general course of the Allegheny river. What streams empty into it? What is said of the Clarion, Red Bank and Conemaugh? Give a description of the Monongahela. Where does the Youghiogeny rise? What is its course, and into what river does it empty? Where is Castleman's river?

4. SOIL.

The soil of a country is formed by the disintegration or decay of its rocks, which being subject to the action of water, frost, and other atmospheric influences, gradually wear away, or crumble and become pulverised to different degrees of fineness. It is therefore evident that soils must differ in their characters and qualities, according to the nature of the rocks from which they have been derived. But the action of floods, and even the more gradual operation of heavy rains, have so washed down and intermixed the matter from the decomposed rocks, that we seldom find a soil formed purely from a single stratum, or variety of rock. This is a beneficial provision of nature, as the mixture of several elements in a soil is essential to its fertility.

The *earthy* portion of soils is seldom less than ninety-five per cent. of their whole weight; the rest being made up of decayed organic matter, and various saline or soluble substances. This earthy portion consists chiefly of *silica*, in the form of sand of various degrees of fineness; *alumina*, in the form of clay; and *lime*, mostly in the form of carbonate of lime. Most soils contain from one to two per cent. of the oxide of iron, and those of a red colour frequently more.

A soil is called *sandy*, in which silicious sand predominates; *clayey*, when alumina forms a considerable portion; and *calcareous*, where carbonate of lime is contained in considerable abundance, as in some of our limestone districts. A sandy soil contains ninety per cent., or more, of sand; a sandy loam from sixty to ninety; a loamy soil from thirty to sixty, and a clayey soil has from fifteen to thirty per cent. of fine sand, which may be separated from it by washing. Pure clay, which, apparently, contains no sand, is a compound of silica and alumina, in the proportion

of about sixty of the former, to thirty of the latter. It will, therefore, be seen that silica is the leading constituent in all soils.

Something more is necessary, however, beside these simple earths in the formation of a fertile soil, which should contain all the inorganic substances necessary for the food of plants, and which are essential to their existence, in sufficient quantity, and in such condition as allows them to be absorbed by the roots. It is accordingly found, by a chemical analysis of productive soils, that in addition to these earths, they contain various alkaline and other substances, such as potash, soda, chlorine, &c., together with combinations containing sulphuric, phosphoric, and other acids, as well as several organic substances, derived from the decomposition of vegetable and animal matter.

The same proportion of ingredients in a soil is not required by all plants; for we find that different vegetable productions extract from the soil different quantities of each of these constituents. The ashes afforded from many kinds of plants have been carefully analyzed by Sprengel, and other chemists, for the purpose of ascertaining the proportions of inorganic matter contained in them, which are derived from the soil. From these experiments it appears that the ashes from one thousand pounds of wheat (straw containing the grain) weigh about twenty-seven and a half pounds; from the same quantity of rye, twenty-three and a half pounds; from oats, forty-five and one-third pounds; from red clover hay, seventy-four and three-fourth pounds; and from the same weight of potatoes eight and a quarter pounds. In these weights of ashes from one thousand pounds of each plant mentioned, were contained as follows :

	Wheat.	Rye.	Oats.	Clover Hay	Potatoes.
Silica,	20.67 lbs.	17.64 lbs.	36.09 lbs.	3.61 lbs.	0.08 lbs.
Alumina,	0.69 "	0.34 "	0.09 "	0.14 "	0.05 "
Magnesia,	0.51 "	0.20 "	0.39 "	3.33 "	0.32 "
Lime,	1.92 "	1.34 "	1.27 "	27.80 "	0.33 "
Potash,	0.88 "	1.66 "	{ 6.00 "	19.95 "	4.03 "
Soda,	0.99 "			5.29 "	2.33 "
Sulphuric acid,	0.40 "	1.33 "	0.62 "	4.47 "	0.54 "
Phosphoric acid,	1.25 "	0.49 "	0.35 "	6.57 "	0.40 "
Chlorine,	0.24 "	0.15 "	0.07 "	3.62 "	0.16 "

Now, in order to show the quantity of each of these ingredients which is exhausted from the soil of an acre of land by a single crop, we will suppose it to produce twenty-five bushels of wheat or rye, fifty bushels of oats, one and a half tons of *dry* clover hay, or seven and a half tons of potatoes. We assume the weight of the straw in wheat to be double that of the grain; in rye three times as much; and in oats the grain to be to the straw as three to five. The weight of vegetable matter in the crop from each acre will then be, of wheat forty-five hundred; of rye six thousand; of oats four thousand; of dry clover three thousand; and of potatoes fifteen thousand pounds. These will have extracted from the soil during their growth, as follows :

	Wheat.	Rye.	Oats.	Clover Hay.	Potatoes.
Silica,	93.01 lbs.	105.84 lbs.	144.36 lbs.	10.83 lbs.	1.20 lbs.
Alumina,	3.10 "	2.10 "	0.36 "	0.42 "	0.75 "
Magnesia,	2.29 "	1.20 "	1.56 "	9.99 "	4.80 "
Lime,	8.64 "	8.04 "	5.08 "	83.40 "	4.95 "
Potash,	3.96 "	9.96 "	24.00 "	59.85 "	60.45 "
Soda,	4.95 "				
Sulphuric acid,	1.80 "	7.98 "	2.48 "	13.41 "	8.10 "
Phosphoric acid,	5.62 "	2.95 "	1.40 "	19.71 "	6.00 "
Chlorine,	1.08 "	0.90 "	0.28 "	10.86 "	2.40 "

In the economy of agriculture it will, therefore, be necessary in order to maintain the fertility of the soil, to add to it, as manure in some form, an amount of each ingredient equal to that extracted by the crop. Most soils, however, contain a sufficiency of silica, and alumina, without further addition;—lime, potash, soda, &c., with decomposed vegetable and animal matter being those most required. It may be assumed as a general principle that if the addition of any article to the soil as a manure renders it more fertile, it is because the soil was deficient in some substance which the manure contained.

Most of our unproductive soils are found to be deficient in lime; hence the addition of this substance, when properly applied, greatly improves them. Many of our rocks which are not limestones contain a certain proportion of carbonate of lime in their composition; for this reason we often find a fertile soil where there is no limestone.

The substratum below the soil has an important influence on its fertility; for if it be gravelly, sandy or open, the water filters through it too readily and carries off much of the lime or other stimulants to vegetation which the soil may contain. If, on the contrary, the substratum be a tenacious clay, the soil will be wet and cold, retaining too much water, excluding the air, and not suffering the fibres of roots to penetrate it freely.

The various shades of colour in soils—red, brown, yellow, &c., are produced by different proportions and modifications of the oxide of iron contained in them; while the dark colour of newly cleared soils and low grounds is commonly due to decayed vegetable matter.

From what has been already said with regard to soils partaking of the character of the rocks from which they are derived, it will be seen that Pennsylvania contains a great variety.

The alluvial soils in the flats along the streams are generally a mixture of various ingredients, carried down and deposited by the waters. When these are not too sandy, and contain a sufficient amount of decomposed vegetable matter, they are usually very productive and highly valued by the agriculturist. Diluvial soils are those deposited by the waters of a deluge, and are commonly found in the lower grounds, but sometimes form small hills, mounds or ridges: these, of course, partake of the qualities of the different regions from which they have been brought. They are sometimes much mixed with pebbles or gravel, and are

too light and open, the rains filtering through them readily, and carrying down the manure which is spread upon the surface. Sometimes, also, they are clayey or wet, being of too close a texture to admit the free passage of the water through them.

In the southeastern portion of the State, where the primary rocks abound, the soil is not naturally so fertile as in some other parts; but having received more careful cultivation, has been rendered generally productive. The ranges of primary rock which contain feldspar, mica and hornblende, usually afford a tolerable soil, the decomposition of these rocks yielding a little lime, potash or soda. The talcose slates are generally covered by a poorer soil, on account probably of the excess of magnesia, which is supposed to be unfavourable to vegetation.

The middle secondary red sandstone and red shale formation, which extends through Bucks, Montgomery, parts of Chester, Lancaster, Berks, Dauphin, York and Adams counties, is a good soil when properly farmed. This rock usually contains a portion of lime in its composition, and small white veins are often seen in it, which are carbonate of lime. The wells dug in this red shale commonly yield "hard water," or that which decomposes the soap used in washing: this is usually owing to the presence of lime in the water, in a state of combination with an acid. There are, however, within the range of this formation many large tracts where the rock has been changed, by causes which will be explained in our article on the geology of the State, from a soft red to a hard dark blue or brown rock; here the soil is less fertile, being commonly heavy, clayey and wet.

It is in the limestone valleys that we find the most productive soil in Pennsylvania, and that which most liberally rewards the farmer for his labour; though sometimes in very dry seasons these soils suffer more from drought than others, particularly where the rock is near the surface. The difficulty of obtaining water is often very great in some parts of our limestone formations; for the rock below the soil being traversed by large fissures and cavities, frequently perhaps also containing subterranean caverns, allows the water to sink to immense depths. Wells are often dug from eighty to one hundred feet deep without obtaining a permanent supply of water, which thus eluding the search of man, finds its way through hidden passages until having accumulated in some vast subterranean reservoir, it gushes forth in enormous springs, forming at once a stream of sufficient power to turn mills or other heavy machinery. From this cause the small springs and brooks which are so abundant in other formations, are comparatively rare in the great limestone region.

The slate formation adjoining the limestone (see *Geology*, III.) is usually rather a light and thin soil; but by the addition of lime and other manures may be rendered productive.

The red and variegated shale formation, with its accompanying belt of limestone (V. and VI.) afford an excellent soil for tillage, and many fine farms are located on various parts of their range through the valleys of the middle counties.

On the olive slate and the red and gray sandstone, (VIII. and IX.) we find a tolerably good soil when newly cleared; but after long farming it requires good husbandry and frequent manuring to keep it productive. Except where the slate and red shale predominate, the land on this series of rocks is apt to be rough and stony.

The red shale formation (XI.) nearest the coal basins, where the valleys are sufficiently extensive for cultivation, affords a soil that is worthy of attention from the farmer; and being situated generally between barren mountains, offers, where improved and cultivated, a pleasing contrast to the general wildness and sterility which surrounds it.

The land upon the white and gray sandstones (I. IV. X. and XII.) is the most sterile and unproductive in the State; being a meagre, yellow, sandy or sometimes clayey soil, and one which, if its stony and rough character did not repel the husbandman, would yield him but a slender reward for his labour.

Within the bituminous coal region west of the Allegheny mountain are many large tracts of excellent land. Until we recede some miles west of the mountain, the country is hilly and rough; and even to our western borders it continues rolling and uneven. The more level tracts of low ground along the streams are highly fertile, and the soil of many of the hills, when cultivated, produces luxuriantly. The many strata of limestone which lie between the beds of coal impart their fertilizing influence, and the decayed vegetable matter of a thousand years also lends its aid to enrich this prolific soil. The importance of good farming is beginning to be understood in this section of the State; and though agriculture in this comparatively new region is not yet conducted with so great a degree of neatness and attention as in the older settled counties, yet many beautiful and productive farms gladden the eye of the observant traveller in passing through western Pennsylvania.

How is the soil of a country formed? What occasions the difference of soils? Of what three elements is a soil chiefly composed? What constitutes a sandy soil? Clayey? Calcareous? In what proportion is sand found in different soils? What is necessary beside earthy matter to make a productive soil? Do all plants require the same kind of soil? Why not? What is necessary to maintain the fertility of a soil? What substances are most required in manures? Why does manure render the soil more productive? What ingredient is wanting in most of our unproductive soils? What is said of the substratum below the soil? To what is the colour of soils owing? What is the character of alluvial soils? Of diluvial? What is said of the soil of the primary rocks in the southeastern counties? Of the middle secondary red shale and sandstone? Of the limestone valleys? Why is water sometimes scarce in limestone regions? What is the character of slate soils? Of the soil of the red and variegated shale formation? Of the olive slate and its accompanying sandstones? Of the red shale valleys surrounding the coal basins? Of certain white and gray sandstones? What is said of the country west of the Allegheny mountain? Mention two causes which render parts of this region fertile. What is said of its agriculture?

5. CLIMATE.

THE climate of Pennsylvania, though it may in general be justly termed healthy and temperate, is so variable and inconstant, and differing so much in one year with another, as to be somewhat difficult to describe. It seems to be admitted, however, that the extremes of heat and cold in the older settled counties are not so great as they were many years ago, which, if true, may be in consequence of the removal of large bodies of forest from the surface of the country and the great increase of cultivated land. To the same cause may be attributed the apparent diminution of the quantity of water in many of the springs and streams, as in a cleared country the evaporation of moisture from the surface is much greater than in forests where the foliage of a thick growth of timber shades the ground. In thickly wooded regions evaporation is thus retarded, the soil is kept moist and the water of rains filters slowly through the ground until it finds its way through springs again to the surface.

It has been observed by a writer on the subject of our climate that "there seems to be a line about the forty-first degree of latitude, beyond which the winters are steady and regular, the earth being seldom without a covering of snow during the winter months." This, however, is probably more owing to the greater elevation of the country in the northern part of the State than to a difference of latitude; for we find on the high table land beyond the Allegheny mountain, in the southern part of the State, and in the same latitude as Philadelphia, but little difference from the climate of those northern counties which are not so much elevated.

A series of meteorological observations was authorised by an act of the legislature in 1837, to be conducted under the direction of the Franklin Institute of Philadelphia, and intended to be made in each county of the State. Thermometers, barometers and rain gauges were furnished to observers in most of the counties, with directions for use and blank forms for entering the results of their observations. It is a subject of regret that the returns of these observations are not more perfect, and that in some counties they have been either entirely neglected or performed in so loose a manner as to be nearly useless. The results as obtained have been published monthly in the Journal of the Franklin Institute, and notwithstanding the imperfections noticed, embody a large and interesting amount of useful information concerning the meteorological phenomena of Pennsylvania for a series of several years.

With a view of showing the extremes of heat and cold, the average temperature, and the quantity of rain falling in different parts of the State, we select the following places in which observations have been made for several years. The account of the rain which fell appears to have been so imperfectly recorded that we shall omit it, except for a few of the places mentioned.

The mark —, placed before the minimum temperature, signifies below zero.

	<i>Latitude.</i>	<i>Max. temp. 1841.</i>	<i>Min. temp. 1841.</i>	<i>Mean temp. 1839-40-41.</i>	<i>Rain in inches 1841.</i>
Gettysburg,	39° 49'	93°	—10°	51.36° for 3 yrs.	
Philadelphia,	39 57	97	3	52.15 " 3 "	55.5
Somerset,	40 00	85	—10	48.00 " 2 "	
Lancaster,	40 03	93	—7	51.96 " 3 "	37.4
Newtown,	40 14	90	1	51.19 " 3 "	57.3
Huntingdon,	40 31	98	—16	51.29 " 2 "	
Pittsburg,	40 32	98	—6	53.01 " 1841	35.9
Port Carbon,	40 44	100	—20	48.94 " 3 "	
Northumberland,	40 53	91	—21	50.50 " 3 "	39.7
Bellefonte,	40 55	95	—25	48.88 " 3 "	
Stroudsburg,	41 00	94	—16	49.15 " 3 "	
Smethport,	41 49	90	—18	44.28 " 3 "	
Silver Lake,	41 57	93	—10	47.25 " 3 "	
Erie,	42 07	91	—1	48.42 " 2 "	

The greatest heat usually occurs in July, and the extreme of cold in January. In the southeastern and southwestern counties the winter does not set in with severity until the latter part of December, and commonly begins to moderate in February. In the latter part of this month, or early in March, the snow disappears, and in the beginning of April vegetation commences. At this season, however, the atmosphere is often damp, chilly or stormy, and until the beginning of May there are frequent returns of cloudy, wet and disagreeable weather. Owing to these changes and to the variable nature of our spring seasons, vegetation advances very unequally in different years; and the promising appearance of the fruit trees in an early spring is often blasted by frosts in April or May.

In the northern and more elevated portions of the State, winter commences early in December, and the snows are deeper and more enduring than in the lower country, seldom melting in the winter, and generally covering the ground until the latter end of March. About the beginning, or towards the middle of April, there is usually a week or ten days of warm pleasant weather, which dissolves the snow and creates the spring freshets in our streams. The weather is damp, and occasionally cold, until the middle of May, about which time vegetation becomes active and the trees begin to put forth their leaves. Frost often appears in September, and is sometimes seen in June. The heat of summer during the day is nearly as intense here as in the less elevated parts of the State; but the mornings and evenings are much cooler, and in the summer nights a blanket is frequently no uncomfortable covering for a bed.

The autumn is usually the most pleasant season in all parts of the State. The mornings and evenings become cool about the first of September, and with the exception of a few warm days in that month, the temperature is moderate. A period of delightfully pleasant weather, with an atmosphere clear and serene, except a slightly hazy or smoky appearance, continues until towards the middle of October, with an almost imperceptible increase of cold.

This weather is then commonly interrupted by frequent rains which herald the approach of winter, and white frosts become common at night. It is said to be an old Indian maxim, that the severity of the winter is in proportion to the quantity of rain which falls during the autumn. During the clear cold weather of winter the wind generally comes from the northwest; and in the same season during storms of snow and rain or damp weather, from the northeast. In the country west of the mountains easterly winds and storms are less frequent than on the Atlantic coast.

In summer the prevailing winds are from the southwest, and at most seasons this may be seen to be the direction of the upper currents of air by observing the motion of the highest clouds in the atmosphere. In July and August thunder showers are common after a few days of intensely hot weather; when these fail to occur periods of drought sometimes ensue which are very injurious to the summer crops, and in some parts of the State occasion a scarcity of water in the wells and springs.

During the rapid thaws of spring the wind is generally from the south or southeast, which brings us a warm current of air from the Gulf stream, passing along our coast from the Gulf of Mexico northward. A sudden dissolution of the snow then takes place, which frequently causes destructive floods in the streams. A strong and continued south wind in the winter sometimes produces this effect in those parts of the State nearest the ocean. In January 1841, the Delaware and Lehigh were so swelled by the sudden melting of the snow as to sweep away most of the bridges across them, besides destroying many miles of canal along both rivers and carrying away an immense amount of lumber, buildings and other property on their banks.

What is the general character of our climate? By what cause is it supposed to have been somewhat changed? What other effect may have been produced by clearing off the timber, and why? Is the climate affected by the elevation of the country? In what months do the extremes of heat and cold usually occur? What is said of the winter and spring seasons in the southeastern and southwestern counties? In the northern and more elevated parts of the state? Of the summer in this region? Which is the most pleasant season, and what is said of it? Mention the course of the prevailing winds in winter. In summer. When are thunder showers most common? What frequently produces rapid thaws in spring? What is the consequence of the sudden melting of deep snows? When and where did a destructive flood occur from this cause?

6. GEOLOGY.

THE limits and design of a work like the present will prevent us from giving more than a mere general sketch of the highly interesting and varied geological features of Pennsylvania. Some of the more minute details, as well as an account of the ores, minerals, coals, &c., will be given when we come to a description of the separate counties.

The various geological formations which we shall describe, are composed of successive strata or layers of rock, one resting upon another, from the primary or lowest in the series, up to the rocks containing the anthracite and bituminous coal, which are the highest in the regular ascending order found in the State. If rocks more recent than the coal occur, they occupy only limited areas, where they have been deposited since the formation of that vast system of lower secondary strata which occupy nearly the whole of our territory.

It will be seen by the most superficial observer, in travelling through Pennsylvania, that the course or range of the various groups and beds of rock is in a direction nearly northeast and southwest; corresponding with the course of the mountain ridges which extend through the State. If he attends to the *position* of the strata, or various layers of rock, he will see that their horizontal inclination is by no means the same in different places, and that they vary by every degree of slope, from level to perpendicular. This slope or inclination is called by geologists the *dip* of the rock, and is of great importance in determining the order of superposition.

The stratified rocks of the secondary series being sedimentary, formed by a succession of deposits from water, we must suppose that originally they lay in nearly a horizontal position. The standing and tranquil waters deposited mud at their bottom, which hardened by pressure and by drying, aided, perhaps, by internal heat, at length became slate, or shale; or if calcareous became a limestone: waters in gentle motion left sand only beneath them, which finally cementing formed sandstones, fine or coarse, according to the velocity of the current; while streams or tides in rapid motion carried away most of the sand, leaving a mass of pebbles at the bottom, which at last, by the same great solidifying process of nature, became coarse conglomerates. This process of deposits from tranquil waters and different currents, varying in endless succession through indefinite periods of time, would naturally produce the variety of strata which constitute our whole system of sedimentary rocks. The varieties of colour are owing, generally, to different proportions and modifications of the oxides of iron and other metals. In order to account for the different degrees of inclination, or slope, which we observe in the strata, we must imagine a series of uplifting actions from central forces, similar to the volcano or the earthquake, moving in a direction from northeast to southwest, upheaving the great mountain ridges, breaking up the strata from their former nearly horizontal position, and heaving and tilting them into the variety of disturbed positions in which they are now found.

The southeastern portion of Pennsylvania, including the southern part of Bucks and Montgomery, the whole of Philadelphia and Delaware, with the southern portions of Chester, Lancaster, and York counties, is occupied by rocks belonging to the *stratified primary* class. These consist chiefly of gneiss, mica slate, talc slate, and their subordinate varieties: the unstratified

rocks of a crystalline structure, such as granite, sienite, &c., being found in small local and irregular veins, principally in the southern portion of the primary range. The primary rocks extend on the Delaware river from Trenton downwards to the southern boundary of the State, and along it westward to the southeastern part of Adams county. Northward of this triangular primary belt is the limestone of Chester and Montgomery counties, which is more or less crystalline, sometimes being marble, and which is also referred to the primary class. Still northward of this limestone, we find in some places a considerable extent of gneiss, with talc and mica slate.

Proceeding farther northward, we come to the *red sandstone* formation, which stretches across the State from the Delaware river above Trenton, to the Maryland line, passing through the counties of Bucks, Montgomery, Chester, Berks, Lancaster, Dauphin, York and Adams. This group of rocks has been referred to the middle secondary period, and is of remarkable uniformity with regard to its materials and appearance throughout its whole range. It consists of dark reddish brown argillaceous sandstone, soft crumbling red and brown shales, with occasional bands of conglomerate, or sandstone containing rounded pebbles. The dip, or inclination of the strata is almost always to the northward, descending at an angle of from twelve to twenty-five degrees.

The conglomerates of this group, by which is meant those layers containing imbedded pebbles, are chiefly found in the lower strata along the southern margin of the formation, or in the very highest, along its northern border. In both these cases, where the red sandstone overlies an older limestone in the vicinity, we find that a large proportion, sometimes nearly the whole, of the imbedded pebbles consists of rounded fragments of limestone of various colours. The paste too, by which they are cemented together, is so highly calcareous that the whole mass may be burned into tolerably good lime. Many portions of this conglomerate, if polished, would make a very beautiful variegated marble, of the breccia variety. The famous Potomac marble, from which were formed the columns in the Representative Chamber of the Capitol at Washington, is of this character and belongs to this formation. It may be seen in Pennsylvania at several points along the northern border of the red sandstone, in the upper part of Bucks and the southern part of Berks, particularly near the Schuylkill two or three miles below Reading. It is also found on Yellow Breeches creek in the northern part of York county, and in Adams, near Millerstown or Fairfield, eight miles southwest of Gettysburg.

The red sandstone formation is traversed by numerous ridges and dykes of *trap rock* or greenstone, which sometimes forms hills of considerable height, and which have usually the same northeast and southwest direction as the other elevated ranges of hill and mountain in the State. This rock is generally of a dark gray colour, with some shade of green, crystalline in its structure, being composed chiefly of feldspar and hornblende, more or less

closely mixed, and though rather tough and difficult to break, it is frequently used as a material for building. It is, however, seldom quarried for that purpose, being usually found in irregular masses of all sizes, scattered over the surface and in the soil. This rock is evidently of igneous origin, and having been brought to the surface in a state of fusion, being upheaved through the dislocated beds of red sandstone in a highly heated state, it has frequently changed the texture and colour of the shale and sandstone in its neighbourhood, converting them into a baked hard blue rock, totally different from their original character. In some of the ridges which cross the upper part of Bucks and Montgomery counties, the hard blue altered rock only is visible, the trap having never reached the surface; but its heat from beneath has been sufficient to change the colour and texture of the overlying shales and sandstones. The soil of these ridges is generally wet clayey and cold, and but little esteemed for purposes of agriculture, while the soil of the unaltered red shale and sandstone is fertile and productive.

North of the middle secondary red sandstone last described, we find on the Delaware below Easton another belt of primary rocks, which forms a chain of hills stretching southwestward across Northampton, Lehigh, Berks, Lancaster, York, Cumberland, Adams and Franklin counties to the Maryland line. This range is commonly called the South mountain, and though somewhat irregular and sometimes interrupted, may be said to be nearly continuous across the state. Proceeding southwestward along this ridge, we find the primary rocks disappear as we approach the Schuylkill, and though seen occasionally west of that river, they are generally covered throughout the remainder of the range to the Maryland line, by the overlying rocks of the lower secondary series.

That vast system of lower secondary strata which extends from the primary rocks upward to the carboniferous or coal bearing series, has been divided for convenience into thirteen separate groups or formations, which we shall notice in their ascending order.

I. Overlying the primary rocks is a hard, white, compact sandstone, almost purely silicious, and sometimes exhibiting evidence of the heating agency of the rocks beneath by its excessive hardness, its ringing sound when struck, its splintery fracture, and occasional discolouration. This rock is chiefly found along the range of the South mountain, from the Lehigh near Allentown to the Maryland line, near which it is finely exposed on the excavations of the Gettysburg railroad. It is also beautifully seen in the cliffs at Chicques Ridge, on the Susquehanna, above Columbia.

II. Above the sandstone last mentioned is a broad belt of limestone, which may be traced from the Delaware river, at and above Easton, through Northampton, Lehigh, Berks, Lebanon, Dauphin, Cumberland and Franklin counties, and so passing southwestward through Maryland and Virginia. Another divi-

sion of this formation is seen in the middle townships of Lancaster and York counties, extending southwestward into Adams, where it terminates in a point near Littlestown. The same limestone is found in many of the valleys in the interior of the state, in the counties of Centre, Mifflin, Huntingdon and Bedford, particularly in Morrison's Cove, Kishicoquillas, Nittany and Brush valleys. This rock is usually of a bluish colour, sometimes gray, or nearly black, tolerably pure in general, some of its layers yielding excellent lime, and others containing different proportions of sand, clay and oxide of iron. It frequently also contains bands and nodules of chert, usually called flint, which is generally of a dark colour. Fossil shells and zoophytes are abundant in some portions of this formation. Iron ore is also frequently found in the soil above it, and many of the most productive ore banks in the State are within the range of this limestone, or immediately on its border. The soil is highly fertile and some of the finest agricultural districts of the State are situated upon this formation.

III. The rock next in order as overlying the limestone is a slate, usually black or bluish, though sometimes gray, olive, or yellowish. In some portions of its range through Berks and Lebanon counties, it is red and brown, with some interposed bands of yellow. It also contains interstratified beds of sandstone, some of which contain rounded pebbles, forming a true conglomerate. Some layers of this formation in the neighbourhood of the Delaware and Lehigh yield excellent roofing slate. Hydraulic cement is also made from some of the lower strata next to the limestone. This rock is found extending on the Delaware from opposite Belvidere to the base of the Kittatiny or Blue mountain at the Delaware Water Gap. Thence ranging southwestward between the limestone belt and the mountain, it crosses Northampton, Lehigh, Berks, Lebanon, Dauphin, Cumberland and Franklin, to the southern line of the state. The position of this slate being next above the great limestone, and between it and the sandstone next to be described as usually forming a mountain ridge, it follows that the slate will always be found near the foot of the mountain, or between it and the limestone. Hence, in the valleys throughout the state, where this limestone exists, we usually observe the slate near the base of the mountain, and frequently extending some distance up its side, when not covered or obscured by earth or stones fallen from the mountain itself.

IV. Next above the slate, and dipping conformably with it, is a formation composed of massive strata of hard white and gray, or sometimes reddish or greenish silicious sandstones of various degrees of coarseness, frequently containing pebbles of considerable size. This rock constitutes that long, narrow, nearly level and continuous ridge which stretches from near the Hudson river, not far from Kingston, across New York and New Jersey, and which, entering Pennsylvania at the Delaware Water Gap, is known from that place to its termination in Franklin county, by the name of Kittatiny or Blue mountain.

This formation is also recognised in many of the high and rugged sandstone ridges which are found in the counties of Juniata, Mifflin, Centre, Huntingdon and Bedford. In its numerous windings, foldings and irregular convolutions; it forms the mountains called Tuscarora, Cove, Shade, Jack's, Brush, Nittany, White Deer, Bald Eagle, Will's, the long complicated range called the Seven Mountains, and some others. It is also seen in Montour's Ridge, from near Bloomsburg in Columbia county to the West branch of Susquehanna, five miles above Northumberland.

V. Resting upon the sandstone last described, and generally near the base of the mountain ridges which contain it, is a series of red and variegated shales, containing in its lower portion some strata of red sandstone, and usually towards the upper, some thin layers of argillaceous limestone. This group, consisting mainly of soft argillaceous and calcareous shales, is exceedingly variable in colour, being striped with narrow bands of red, yellow, green, olive and purple. Its character also varies somewhat in different districts of the State; for while in its long range along the northern side of the Blue mountain we find it almost uniformly to consist of strata of red shales and sandstones, and nearly or quite destitute of the thin limestone bands; yet in other regions of the State it maintains its character of variegated colour and its thin layers of limestone. This formation is important as containing the excellent *fossiliferous iron ore* which is now extensively worked in the neighbourhood of Danville and Catawissa, in Columbia county, also in several places near the Juniata, and in other parts of the State where this formation occurs. The position of the ore strata is generally found to be in that portion of the formation which contains the thin limestone layers.

This group of rocks lies on both sides of Montour's Ridge north of Danville, and thence stretches across the West branch into Union county. It will also be found in many of the valleys at the base of the mountains which contain the last described sandstone, and if this sandstone forms an *anticlinal axis*, or arch, in the mountain, dipping both ways from the top, like the roof of a house, the shales of this formation, with their contained ore, being above the sandstone, will be found on both sides of the mountain. This is the case in Montour's Ridge, Will's, Jack's (south of the Juniata river,) Shade and Tuscarora mountains towards the north. If, on the contrary, the sandstone strata of the mountain all dip in one direction, as in the Bald Eagle or Muncy mountain, the shales of this formation, with their contained ore, will only be found on the side toward which the strata of mountain rock descend, the other being occupied by the slate which has been described as underlying the mountain sandstone. It may, however, sometimes occur that the sandstone rocks form a *synclinal axis*, or trough shaped basin, by dipping both ways towards the centre, as in the Nittany mountain. In this case the valleys on both sides will be occupied by the underlying black slate formation; while the red and variegated shales, being always in position superior to the sandstone,

if found at all, will be in the basin above it, near the middle of the ridge.

VI. Next in position above the red and variegated shale formation last described, we have an argillaceous blue limestone, rather slaty, of moderate thickness, though vastly inferior in this respect to that described in Article II. It frequently contains between its layers thin bands of slaty shale, somewhat similar to those of the formation below it; but in its upper portion these disappear and the limestone becomes purer. Some of the strata contain abundance of fossil organic remains, commonly called petrifications, and iron ore is sometimes found associated with it. This limestone is found in the valley north of the Blue mountain, above the red shale, and of course north of it, and may be seen at various points along its range, being quarried in many places for use. It is also found encircling Montour's Ridge, outside of the red shale, and extending northeastward nearly to Berwick. In Perry county it sweeps around two large triangular areas, from the Susquehanna near Fishing creek, along the northern side of the Blue mountain towards Landisburg, where it folds back and runs northward and northeastward beyond Bloomfield. Here it again turns westward towards the head of Sherman's creek, where it again folds round to the northeast, and crossing the Juniata near Millers-town, extends by Pfoutz's valley to the Susquehanna below Georgetown. In Juniata, Mifflin and Union counties this limestone will be found overlying the red and variegated shales of the last described formation, in the valleys near the Tuscarora, Shade and Jack's mountains, frequently forming limestone ridges which rise above the general level of the valleys. In Huntingdon county it is seen on the Juniata river on the west side of Warrior ridge, and thence extends east of Tussey's mountain, through Bedford county, to the Maryland line. The limestone of the valley about the town of Bedford, also belongs to this formation. The most northwestern range of this rock in Pennsylvania is found along the valley of the West branch of Susquehanna, from Muncy, by Williamsport, to the mouth of Bald Eagle creek, and thence up the valley of that stream southwestward to the neighbourhood of Hollidaysburg, on the Juniata. Here it sweeps around south of Brush mountain, and passes west of Canoe mountain, Dunning's and Will's mountain, through Bedford county to the Potomac river, above Cumberland.

This limestone is also found in many other places; we have only noted some of its principal ranges, as a minute description of all the various windings and doublings of this and other formations would far exceed the limits to which we are confined in such a book as this. Enough has, perhaps, been said to enable the intelligent and careful observer to distinguish this limestone group from the lower one described in Article II., and which, it will be seen, occupies a very different position in the great series of Pennsylvania rocks.

VII. The formation next in the ascending order above the limestone last described, is of very variable thickness, and in some places

seems entirely to disappear. It is a coarse grained and rather loosely cemented sandstone, of a whitish, or rather yellowish white colour, having in some of its beds abundance of fossil shells, and also some bands of chert or flint; but is not important either for its extent or its mineral contents. Neither is it always continuous in its range with the adjoining formations; for though when found it is always above the limestone last described, and below the olive slate next to be noticed; yet as has been observed, it is sometimes absent, and the slate which belongs above it is found resting upon the limestone. This is the case in Columbia and Northumberland counties, around Montour's ridge, and perhaps, in some other places.

Where this sandstone is observed in considerable thickness, it generally forms a line of irregular, sharp, rugged hills, such as may be observed ranging southwestward from near Stroudsburg in Monroe county, nearly parallel with the Blue mountain, and extending beyond the Susquehanna into Perry county. It will be generally found accompanying the limestone along its ranges, as mentioned in the preceding article, through the counties of Perry, Juniata, Mifflin, Union, Huntingdon and Bedford. The celebrated "pulpit rocks," on Warrior ridge, above Huntingdon, be-



Pulpit Rocks on Warrior Ridge.

long to this sandstone. Some iron ore is found within the range of this formation, and the rock itself is said to form a good material for the hearths and inwalls of furnaces.

VIII. We now come to a group of alternating strata of dark gray, greenish, and olive coloured slates, interstratified with gray and greenish argillaceous sandstones: the slates predominating

in the lower beds, where we sometimes also find thin layers of limestone. Some of these lower strata are well adapted for making hydraulic cement. As we ascend in this group the sandstones become more prevalent in the upper portion. Many of the strata in this formation are abundant in fossil shells, encrinites, trilobites, &c. Iron ore has occasionally been found accompanying this group of rocks, but in general it is much inferior in this respect to the lower formations. This group is of much greater thickness than the two last described, and considered in conjunction with the following, both together occupy no inconsiderable portion of territory. When the rock strata are nearly horizontal, or have a gentle dip, a thick group or formation will of course spread over a wide extent of country. But when the strata have been upheaved into a position more approaching to perpendicular, the area occupied is more confined and narrow. Thus a series of rocks three thousand feet thick, standing in perpendicular strata, would cover about half a mile in width, while the same series if lying nearly flat or horizontal might spread over many miles. Accordingly where we see these two formations on the Susquehanna, between the Kitatiny and the Second mountains, they seem to occupy but little space because the strata are nearly perpendicular; but following them eastward towards the Delaware we find them flattening out to a very gentle northwestern dip, and covering a large portion of Monroe, Pike and Wayne counties. The same remarks will also apply to these and other formations, in various parts of the state.

IX. Above the olive slate formation last described, we find a series of brownish red shales and sandstones, with some interposed layers of greenish gray and buff coloured sandstones and shales. This group differs from that last described more in colour than in actual composition; and like it is a broad heavy series of rocks, and extensive in its range. Its sandstones yield abundance of excellent material for building; but its mineral contents are of little importance. The soil of this, as well as that of the preceding formation, is but moderately fertile; and yet the industrious farmer, by proper attention to the use of lime and other manures, manages to reap a rich crop from the hills of these slates and sandstones.

These two formations range eastward from the Susquehanna above the Blue mountain, passing southward of the Schuylkill and Lehigh coal regions, and along the southern side of Pocono mountain in Monroe county; then spreading out broadly over most of Pike and Wayne counties, sweep around the eastern terminations of the anthracite coal fields in broad flattened synclinal axes. Nearly the whole of Susquehanna county, a large portion of Luzerne and Bradford, with most of the region which lies north and west of the bituminous coal fields, in the northern counties of the state, belong to this series of rocks.

The same formations in like manner spread around the western ends of the anthracite basins, and are found in the broad undulating valleys outside of the high mountain ridges which stretch around

the coal fields. The olive slate and red shale rocks appear in Armstrong's valley in Dauphin county, around Halifax,—in the valley of Shamokin creek southeast and east of Sunbury, thence stretching across the Shamokin hills to the North branch, they extend through Roaring creek valley by Catawissa, and into Luzerne county southeast of the Wyoming coal valley. Thence spreading out and folding round the Lackawanna valley, they return on the northwest through the northern townships of Luzerne and Columbia, and extend over the broad hilly region along the southern base of the Allegheny mountain. The red and gray sandstones of the upper portion of this series, form most of the southeastern face of the Allegheny throughout its course across the state; while the olive slates of the lower group are seen in the range of smaller hills which stretch along near the base of that mighty chain.

The rocks belonging to these formations are also seen on the Juniata river, at and below Huntingdon, whence they extend southward, branching out and passing on both sides of the Trough Creek valley and the Broad Top coal field. The eastern division passes along east of Sideling hill, a part of it folding back northward again to the Juniata in Aughwick valley, while the main portion spreads broadly out over most of the southeastern part of Bedford county. The western division is seen along Allegripus ridge, west of Terrace mountain, and spreading out south of Broad Top, occupies most of the region between Ray's hill and Tussey's mountain to the Maryland line. These formations are visible in many other places; for we have not attempted to describe their range minutely,—a mere general outline being all that our limits enable us to give.

X. Over these red shales and sandstones rests a series of massive beds of coarse hard gray sandstone, sometimes containing pebbles, with occasional bands of dark greenish slates intermixed. This rock is much more compact, harder, and tougher than the sandstone below it. The strata, too, are generally heavier, and the whole formation more united and massive in character. We are now approaching the coal bearing rocks, and accordingly sometimes find in this formation bands of black carbonaceous slate, the flattened stems of plants and even thin scales of coal itself. Let no one be deluded, however, by the hope of finding productive veins of coal in this formation, for we are still several hundred feet below the true coal bearing series.

The anthracite coal basins are generally in the form of long canoe-shaped troughs, encircled by a double border of mountains, of which the rock we are now describing, forms the *outer* ring or barrier. It is seen in the Broad mountain, above Mauch Chunk, on the Lehigh, whence it sweeps round the eastern end of that coal basin, and runs southwestward in the Second mountain through its whole course from the Lehigh to the Susquehanna. Crossing this river below the town of Dauphin, it encircles a little cove on the west side, again recrosses and appears in Peters' mountain to its eastern termination near the head waters of Wico-

nisco creek. Here it again turns westward, in Berry's mountain, and once more crossing the Susquehanna below Millersburg, extends into Perry county nearly to the Juniata, where it again winds round to the northeastward, again crosses the Susquehanna just below Liverpool, and forms the ridge called Mahontongo mountain, north of Lykens' valley. This mountain terminates near the southeastern corner of Northumberland county, connecting with the Line mountain, in which this rock formation again turns westward towards the Susquehanna, which it reaches in the high knob on the east side of the river, above the mouth of Mahanoy creek. Here it does not cross the river, but again turns to the northeast, forming the long range called the Little mountain, south of the Shamokin and Roaring creek valleys, and extending to Catawissa creek. From this point it again bends to the northwest, and forms a chain of short mountain ridges and knobs extending to the western end of Catawissa mountain, southeast of the town. Hence its course is again to the northeastward along the Catawissa mountain, and its continuation the Nescopeck mountain, at the eastern termination of which this formation flattens out and probably joins the Wyoming or Moosick mountain, on the southeast of the Wyoming coal basin. It ranges along this side of the coal field southwestward, crossing the North branch of the Susquehanna some distance below Shickshinny, and extends in the Knob mountain nearly to Orangeville, in Columbia county. Here it folds sharply back, forming the Shickshinny mountain, and stretches along the high ridges on the western side of the Wyoming valley, crossing the North branch above the mouth of Lackawanna, and so on until again uniting with the Moosick mountain, north of Carbondale, it thus encircles the Wyoming and Lackawanna coal basin.

By tracing these multiplied windings of this formation on a good map of the State, we shall see that it encloses all the anthracite coal fields, sweeping along their sides and folding sharply round their pointed ends, though generally at some distance from them. The space between is occupied by a red shale, commonly forming a little valley, and belonging to the formation next to be described, as lying above the sandstone of which we are now treating. If the dip of this sandstone be observed, it will be found, throughout the long winding course which we have described, to be always descending towards the side occupied by the red shale which lies between it and the coal basins, and of course, passing beneath the red shale. An exception to this general rule may, however, be found in the Second mountain, south of the Schuylkill and Swatara coal regions, where the dip is inverted, the rocks having, by some great convulsion, been tilted beyond the perpendicular.

The same sandstone also occurs in Bedford and Huntingdon counties, encompassing the Broad Top coal basin, and may be seen in the Terrace mountain and Sideling hill, enclosing the red shale of Trough Creek valley, and passing southward in Allegripus and Harbour mountains.

This formation is found to occupy the same position in relation to the bituminous coal fields that it does to the anthracite, and we accordingly find it along the southeastern slope of the Allegheny mountain near its summit, dipping gently towards the northwest, throughout its whole course, from the Maryland line to the north branch of Susquehanna, near Tunkhannock, in the new county of Wyoming. Here it folds round the extreme northeastern point of the bituminous coal region, and passes westward through the northern counties, on the north side of the bituminous coal, having here of course a slight southern dip.

XI. Above the hard gray sandstone last described is a series of red shales and red sandstones, with some alternating layers of gray sandstone, though the red shale usually predominates throughout the formation. Some of the strata are more or less calcareous, and a few of them approach the character of a true limestone. These, near the anthracite coal regions, frequently consist of a thin band of conglomerate rock, made up of pebbles chiefly of limestone, having a light bluish gray or reddish colour, imbedded in a cement of reddish or greenish argillaceous shale. Some of the purest of these calcareous bands might be burned into a rough lime; but in general they are not found sufficiently pure to be of much use in this respect. Iron ore of considerable value is found in this formation in certain parts of its range.

It has been already observed that this red shale formation is found extending around all the anthracite coal basins. It is usually seen in the deep and narrow valleys which lie between the ridges of sandstone, mentioned in the preceding article, and those of the conglomerate formation next to be described, as lying above this red shale, and forming the immediate margin of the trough or basin in which the coal is found. Accordingly, we observe it between the Second and Sharp mountains, extending on the south of the coal, from the Lehigh to the Susquehanna, and there folding round the end of the Stony creek basin, it runs up the valley of Clark's creek to the head of Wiconisco, where it again turns west and passes down Williams' valley to Millersburg, on the Susquehanna, where a portion of it is seen on the west side of the river in Perry county. From this it stretches again eastward, up Lykens' valley to the north side of the Broad mountain, passing up between the western points of the southern coal fields, and dividing them from the Shamokin and Mahanoy region. It passes thence westward down the valley of Mahanoy creek, near the mouth of which it again folds eastward round the point of the Mahanoy coal basin and pursues the long narrow valley south of the Little mountain to near the head of Catawissa creek, down which it passes northward to the southern base of the Nescopeck mountain. Its course is now northeastward through the Nescopeck valley to the Lehigh, where it folds round the eastern points of several divisions of the coal field, towards the southern range, where we first mentioned its occurrence, between the Second and Sharp mountains. We have only traced the general outline of this formation; it may be

seen in other places between the various minor divisions of the great anthracite basins.

It will be found in like manner, sweeping around the long canoe-shaped coal trough of Wyoming and Lackawanna, always maintaining its position between the sandstone of the last mentioned formation and the conglomerate or coarse pebble rock which lies immediately below the coal series. The coal field of Broad Top, in Bedford and Huntingdon, is also encompassed by this same red shale group, which is seen in the valley of Trough creek, north of Broad Top, and passing both on the east and west of that mountain, again unites in Wells' valley on the south of it.

This formation which has been described as encircling the mountain ridges which enclose the anthracite coal measures is also found in the same position with respect to the bituminous coal fields. But while in the anthracite regions it has a thickness of perhaps not less than two thousand feet, we find it much diminished where it occurs below the bituminous coal, and observation would seem to prove that it decreases in thickness as we trace it northwestward. In the southeastern portion of the bituminous coal country, we find it maintaining a massive character in the Little Allegheny, the Savage, the Great Allegheny and the Negro mountains, also in Laurel Hill and in Chesnut ridge, in most of which ranges it contains thick bands of limestone, or highly calcareous rock; yet when we observe it as far north as Clinton and Lycoming counties, it thins away to extremely diminished size. In the neighbourhood of Farrandville, on the west branch of the Susquehanna, in Clinton county, the total thickness of this formation is but about twenty-four feet; and still farther northwest it seems in many places entirely to thin out and disappear.

XII. The next formation above the red shale, and immediately beneath the coal series, is a group of massive strata of coarse silicious conglomerates, alternating with white or light coloured sandstones, and containing some thin beds of dark carbonaceous shale. Around the anthracite basins, the conglomerate is the prevailing character of the rock, which there consists chiefly of cemented pebbles, of white quartz, from the size of a pea to that of an orange. But in many parts of the range of this formation, beneath the bituminous coal region, it shows less of the conglomerate character, being in some places almost wholly a coarse white sandstone.

This rock will be found on the ridges which form the immediate border of all the anthracite coal basins; also around the coal of Broad Top, and of the bituminous region west of the Allegheny. Our limits will not permit us to trace it in detail; but as we have described the general range of the red shale below it, the locality of this rock may easily be found in connection with it.

As this conglomerate formation composes the true floor of the coal measures, all search for productive beds of that fuel beneath it must be fruitless; and this rock will form a sure guide to the judicious explorer, who will attend to its dip and direction and always search for coal *above* it. This observation applies, of

course, only to the main heavy conglomerate formation; as there are in the coal series, and between the coal seams, some thin bands of a conglomerate character, though very different from the coarser and thicker rocks of the main formation below the coal.

XIII. It now remains for us to describe, in a brief and general manner, that extensive and varied system of rock strata which contains the coal of Pennsylvania. The lowest beds of coal are generally found near the underlying conglomerate rock, or sometimes even in it; but as we ascend in the series we find the coal seams separated by beds of greater or less thickness of soft argillaceous bluish gray, or light gray sandstone, and of black, dark coloured, or grayish slates and shales. These shales sometimes contain bands and kidney-shaped masses of valuable iron ore; but it seems to prevail as a general rule, that this ore in the anthracite basins is not equal either in quality or abundance to that of the bituminous region west of the Allegheny mountain. Valuable strata of limestone also are found between the beds of bituminous coal, which appear to be nearly, if not totally, absent in the same position in the anthracite series.

In considering the extent included within the general boundaries of the coal regions of this State, we must by no means suppose that the coal spreads continuously over their whole area. When examined minutely it will be found that the effects of subterranean elevating forces have heaved up the lower rocks in a series of anticlinal elevations within the general limits of the great coal fields, subdividing them into a series of lesser synclinal troughs; while the denuding action of waters, and the natural wearing down of the surface, have swept away the whole of the coal series from much of the surface occupied by these lines of elevation. It is, therefore, only in these lesser troughs that the general mass of our coal will be found.

The anthracite region may be properly divided into four distinct groups or divisions, each comprising a series of minor basins or branches of the coal deposits. First, on the south, we have the Pottsville, Mine hill and Broad mountain basins, the former extending eastward to the Mauch Chunk mines near the Lehigh, and westward to the neighbourhood of Pinegrove, where it forks out into two long points or branches, the southern one extending along north of the Sharp mountain to the Stony creek region, and reaching nearly to the Susquehanna river. The northern branch extends into Bear valley, between Williams' and Lykens' valleys, and terminates about twelve miles east of the Susquehanna.

North of the Broad mountain axis we have the Mahanoy and Shamokin division, which terminates westward within a few miles of the Susquehanna, and on the eastward is composed of a number of smaller irregular basins, separated by local axes or lines of elevation. These basins terminate eastward on the north of the Broad mountain, some extending as far as the borders of Quakake valley.

East and northeast from this group of basins we have another series, consisting of seven or eight narrow basins, separated from

the last mentioned division by the deep red shale valleys of the head waters of the Catawissa, Little Schuylkill and other streams. In this division are included the Beaver meadow, Hazelton, Black creek, Buck mountain, Green mountain and other local coal fields.

Separated from all these by a great anticlinal axis which brings up the lower rocks in the valley of Wapwallopen creek, we find considerably farther northward the great Wyoming and Lackawanna basin, which extends from the north branch of the Susquehanna, near Shickshinny, to a few miles above Carbondale on the Lackawanna, and terminates in a point not far from the southeast corner of Susquehanna county.

It may be observed as a general rule, that in the southern anthracite basin the character of the coal changes as we proceed southwestward; for while we find near the Lehigh a compact, hard, firm coal, sometimes of rather difficult ignition, as we trace it towards the Susquehanna it gradually becomes more open in texture, contains rather more impurities, and burns more freely, until near the western extremity of the same basin a coal is found which in some measure partakes of the bituminous character.

The coal of Broad Top mountain in Huntingdon and Bedford counties, though bituminous, is more hard and compact in its character and contains less bitumen than the coals west of the Allegheny generally; the same remark will apply in some measure to the beds found in the Southampton basin in the southeast of Somerset county. The coal beds west of the Allegheny mountain seem to show an increase of bituminous matter in their composition as we proceed northwestward; it having been proved by analysis that while the coals nearest the Allegheny mountain average about twenty-one per cent. of bitumen, those in the neighbourhood of Pittsburg and the western part of the State yield nearly forty per cent.

Though the gentle northwest dip of the rocks on the summit of the Allegheny, and the general apparent nearly horizontal position of the strata from this to the western part of the State, might lead to the idea that the coal beds are continuous over the whole of this great area; yet closer examination will show that this apparently undisturbed series of rocks has also been subject to the effect of upheaving forces, though certainly much less powerfully affected than the region east of the Allegheny. Several great lines of elevation enter our bituminous coal region from the south and extend their influence across a large portion of it, causing a series of undulations in the strata. On these anticlinal arches the lower rocks are brought up to the surface, and the coal bearing strata have disappeared, so that this region is separated also into a series of synclinal basins containing the coal, though generally of much greater extent than those of the anthracite coal fields.

The great anticlinal ridges of Negro mountain, Laurel hill and Chesnut ridge are sufficiently elevated to bring up the red shale with its limestone bands and even some lower formations, as may be seen in the gaps where streams pass through them. Beside

these there are, farther northward, many other less elevated broad anticlinal swells on which the rocks next below the coal appear; but the coal strata themselves have been entirely swept away. In some of the northern counties the coal occupies only the summits of the highest hills, the denudation and wearing down of the valleys having brought the general level of the country below the position occupied by the coal bearing rocks. It will thus be seen that only a limited portion of the so called bituminous coal country is actually occupied by productive beds of coal. This is mentioned with the view of correcting an erroneous impression generally entertained, and not by any means with a design to convey the idea that the quantity of coal possessed by Pennsylvania can ever be exhausted, or even materially diminished by the mining and consumption of centuries.

Having thus given an outline of the geology of the State, we reserve the notice of more minute particulars relative thereto for our description of the separate counties.

Of what are geological formations composed? What is the general course of the ranges of rock in Pennsylvania? What is said of their inclination or *dip*? How were the stratified secondary rocks formed? By what causes were the different varieties produced? From what do they derive their colour? How may we account for their different degrees of inclination or slope? What class of rocks is found in the southeastern part of the State? Describe the range of the middle secondary red sandstone formation, and the kinds of rocks of which it is composed. In what parts of it is the conglomerate called Potomac marble found? Describe the trap or greenstone rocks—their origin—and their frequent effect upon the neighbouring red shale. What is the extent of the primary rocks of the South mountain? What is the character of the sandstone overlying the primary rocks, and where does it occur? What formation (II.) is next above this, and where may it be traced? In what other places is this limestone found? What valuable ore often occurs with it? Describe the slate next in order above the limestone. What useful materials are found in the slate formation? In what parts of the State may it be seen? In what mountains may the sandstone (IV.) next above the slate be found? What is said of the group of red and variegated shales next in order? What valuable mineral is contained in them? In what parts of the State does this formation occur? Describe the limestone next mentioned. What does it contain? What places can you mention where this limestone may be seen? What kind of rock is next above this limestone? Where does it occur? Give a general description of the varieties of rock contained in the olive slate formation. (VIII.) What is there valuable or curious contained in it? What is said of the difference in extent between horizontal and perpendicular strata? What kinds of rock compose the next formation above the olive slate? For what useful? Describe the general range of these two formations on a map of the State. What is the character of the sandstone (X.) next in order? What is sometimes contained in it? Name the mountains in which this sandstone occurs, and trace its range on the map. What is said of the red shale and sandstone next mentioned? Are any useful materials found in it? Around what does this formation extend? Mention the valleys in which it occurs. What is said of this formation near the bituminous coal region? Describe the character of the formation (XII.) next below the coal. Where does it occur? Of what use is a knowledge of its position when searching for coal? Where are the lowest coal beds generally found? What kinds of rocks lie between the beds of coal? What valuable materials are found in the slates and shales between the coal

beds? What difference is there in this respect between the anthracite and bituminous regions? What is said about the coal extending over the whole of these regions? Into what four districts may the anthracite region be divided? What is the extent of the first?—of the second?—of the third?—of the fourth? What change in quality is observed in the coal of the southern basin, as we proceed towards the Susquehanna? What is said of the coal of Broad Top, and of that of Southampton in Somerset county? Mention the change in the quality of bituminous coal as we proceed northwestward. Are the beds of coal continuous over the whole country west of the Allegheny mountains? Why are they not so? In what ridges do the rocks below the coal series appear? Why is coal only partially found in some of the northern counties? What is said of the probability of exhausting the coal of Pennsylvania?

7. BOTANY.

It is not intended in this article, nor would it be consistent with the plan of our work, to give more than a mere outline of the varied and extensive series of vegetable productions which constitute the Flora of Pennsylvania. Our attention will, therefore, be chiefly confined to a brief notice of the more useful kinds of forest trees, and such plants as are most common or specially worthy of consideration on account of their connection with agriculture, arts, manufactures, commerce and medicine. The *botanical names* will be given for convenience of reference to works on the subject; but the use of scientific technical terms will be avoided, inasmuch as they might not be understood by the general reader; our object being to give a plain and concise account of our native trees and plants, rather than a scientific arrangement and description.

Forest Trees.

The *Oak*, in its various species, is one of the most really useful trees, not only in Pennsylvania, but in most parts of the United States, as well as in Europe. It seems, like iron ore in the mineral kingdom, to have been multiplied by nature in proportion to its utility; being found almost every where, and every where supplying the wants of man for a vast variety of purposes. Its wood is used by the shipbuilder, by the civil engineer and architect, the cooper, the coachmaker, the wheelwright, the millwright, in the construction of farming implements, for fences and for fuel. The bark is used in tanning leather, in dyeing, and forms a considerable article of export to foreign countries.

White Oak, (*Quercus alba*) is the most esteemed of this noble family of trees; its wood, being compact, strong, tough and durable, is adapted to a greater variety of purposes than any of the other species. It is found throughout the State; but in the northern and western counties the wood is not so compact and tough as in the southeastern districts. This may be the effect of a difference of soil, or because the forests are thinner and the trees more widely separated from each other in the older settled counties.

Even the best of our oak timber has not so close a grain as that of Europe.

Post Oak, or Iron Oak (*Quercus obtusiloba*) seems to be chiefly confined to the eastern part of the State, and is less abundant than the white oak, which it so much resembles that it is generally taken for a variety of that species. It does not grow to so large a size as the white oak, the wood has a finer grain, the acorn is smaller, and the lobes of the leaf wider and obtuse at the termination.

Swamp White Oak (*Q. prinus discolor*, or *bicolor*) is not abundant and grows only around swamps, or in low and very moist grounds. It is less esteemed than some of the other species.

Swamp Chesnut Oak (*Q. prinus palustris*) grows in swamps and wet grounds, bears great resemblance to the rock chesnut oak, and is frequently confounded with it. The leaves are similar, but the acorn of the rock chesnut oak is more slender and pointed.

Rock Chesnut Oak (*Q. prinus monticola*) is not generally diffused throughout our forests, but is chiefly found on rocky ridges and declivities. It is very abundant on many of the mountains in the interior of the State. The wood is said to be excellent for fuel, and the bark is highly esteemed by tanners.

Laurel Oak or Shingle Oak (*Q. imbricaria*) is rare east of the mountains; but west of them is more common.

Scrub Oak (*Q. banisteri*) is very abundant on barren mountain ridges, seldom growing more than six or eight feet in height, and so close that it is often difficult to find a passage through the thickly intermingled branches. So thickly does this shrub grow, and so nearly uniform is its height, that when viewed from a distance, many of the barren wastes, containing hundreds of acres, appear as if covered with grass, with here and there a solitary pine tree rising high above to relieve the monotony of the scene.

Spanish Oak (*Q. falcata*) is much less common in Pennsylvania than farther south. Its wood is not considered of much value; but the bark is greatly esteemed for the manufacture of leather, and commands a high price.

Black Oak (*Q. tinctoria*) grows abundantly in most of our forests, and is one of our largest trees. The wood is of a reddish colour, and coarse grained; it is not very durable, but is used for fencing, fire wood, staves and shingles. It is from this species that the *Quercitron bark* is obtained, which is exported in large quantities, and used in dyeing wool, silk, &c., a yellow colour. When used by tanners it imparts a yellow tinge to the leather.

Scarlet Oak, (*Q. coccinea*.) This tree is confounded with the true Spanish oak, being called red oak in the northern States, and Spanish oak in the south. The leaves of the Spanish oak are very downy underneath, while those of the scarlet oak are smooth and shining on both sides. The leaves of the scarlet oak begin to change colour with the first cold weather, and after a few frosts they turn to a lively red, and not to a dull tint like the true red oak. It is a large tree,—the timber is reddish, of a coarse texture and its pores are entirely empty. Not being so durable as the white

oak, it is but little used in building, or in wheelwright work, but is chiefly employed for staves, fuel and fencing.

Red Oak (*Q. rubra*) has leaves somewhat resembling the Spanish oak, but not downy on the under side. In autumn they turn to a dull red and then fall. It bears acorns abundantly, which are very large, and contained in remarkably flat cups, the scales of which are so closely united that the surface is nearly even. The texture of the wood is coarse, with large and empty pores: it is strong, but not durable, and therefore, little used in buildings. The bark has a thick cellular texture, with a thin outside covering, and as well as that of the scarlet oak, is much used by tanners.

Pin Oak (*Q. palustris*) is common in low and wet places, and has leaves much like those of the scarlet oak, but considerably smaller. The small limbs along the body of the tree die as it advances in age and drop off at a little distance from the trunk, which gives it the appearance of having pins driven into it. The bark is smoother than that of most other oaks.

Walnut. The Black Walnut (*Juglans nigra*) is common in our valleys where the soil is deep and fertile, and frequently attains a height of fifty or sixty feet. Its wood when freshly cut is of a violet colour, but becomes dark by exposure to the air; it is susceptible of a beautiful polish, and remains sound during a long time. Among other good qualities, it possesses considerable strength and tenacity, and is not liable to be attacked by worms. It is much used for making coffins and various kinds of cabinet work,—also for the stocks of military muskets. Where it is abundant it is frequently used in building, and for the posts of fences, which, it is said, will last from twenty to twenty-five years. The nuts are collected and sold in our market; the kernel is large and pleasant to the taste, though inferior to the European walnut. The husks or outer covering of the fruit, as well as the bark, are used in the country for colouring woollen stuffs.

White Walnut or Butternut, (*Juglans cathartica* or *cinerea*) though less abundant in some parts of the State than the preceding species, is yet common on hill sides, along streams and other places where it finds a congenial soil. The nuts are longer and more oval than those of the black walnut; the kernel is thick and oily, and soon becomes rancid. In the green state, however, and when about half grown, they are used for making pickles. The wood is of a reddish colour, and not so heavy and strong as that of the black walnut, but is very durable, and also free from injury by worms. The bark yields an excellent cathartic medicine which is said to be efficacious in cases of dysentery. It is also used in the country for giving a brown colour to wool.

Hickory. Of this valuable tree we have several species, the timber of which, though differing in some respects, yet possesses the same general properties of great weight, strength and tenacity, speedy decay when exposed to moisture, and a peculiar liability to injury from worms. But though not adapted to use in buildings and fences, this wood performs other services in which no other

kind of timber could so well be employed. It is almost universally used where great strength and elasticity are required, as in the axletrees of carriages, the handles of axes, and other carpenter's tools, large screws, cogs for mill wheels, whip handles, rake teeth, flails for threshing grain, the bows of ox yokes, and for innumerable other agricultural and domestic implements. For fuel it is generally preferred to every other kind of wood, affording in the same bulk more combustible matter, yielding a more lively heat, and leaving a heavy, compact, long-lived coal. The most common species in Pennsylvania are the common or White Heart hickory (*Carya tomentosa*), Pig nut (*Carya porcina*), Bitter nut (*C. amara*), Shell bark (*C. alba* or *squamosa*), and Thick Shell bark (*C. sulcata* or *laciniata*). The last named species is not so common east of the mountains as in the alluvial bottom lands on the Ohio and the streams which empty into it.

Maple. The White Maple, (*Acer eriocarpum*) sometimes called Silver maple from the colour of its leaves on the under side; and the Red maple (*Acer rubrum*) both grow in Pennsylvania; the latter, however, is the more common species. They may be distinguished by observing that the red maple has the young shoots, the flowers and the fruit deeply tinged with red, while in those of the white maple that colour appears but faintly. The leaf of the white maple is five lobed and deeply sinuated; those of the red are three lobed and unequally toothed. The capsules which contain the seeds of the white maple are very large, and bear some resemblance to the wings of a huge grasshopper. The wood of the red maple is harder than that of the white, and has a finer and closer grain. It is much used by chairmakers, and for bedsteads, spinning wheels, saddle trees, and a variety of other purposes. This wood is of a solid texture, and by polishing acquires a glossy and silken surface. The variety called *curled maple* is commonly found in old trees, in which the fibres of the wood, instead of following a perpendicular direction, are undulated and waving. This renders the wood difficult to split, but when skilfully polished produces the most beautiful effect of light and shade. But few trees, however, afford this curled and waving disposition of the woody fibre. The bark of the red maple yields a purplish colour by boiling, which, by the addition of copperas (sulphate of iron) becomes dark blue, approaching to black. It is used in the country for dyeing, and sometimes for making ink.

Of the Sugar Maple we have two kinds; the true Sugar maple (*Acer saccharinum*) and the Black Sugar tree, or Black maple (*Acer nigrum*). The former is most abundant in the northern parts of the State, and along the elevated range of the Allegheny table land, where the soil, though fertile, is cold and moist. It is also found on the steep and shady banks of the streams which rise among the mountains. The Black maple is more common in the low rich soils along the western rivers. The leaves of the latter are of a darker green and a thicker texture than the true Sugar maple; they are also slightly downy on the under side, while the others are smooth. Both are large trees, growing to a

height of from fifty to seventy feet; the wood of the Black maple, though much like the other, is coarser grained and less brilliant when polished. The woody fibre of the Sugar maple is sometimes waved like the curled maple; but a more beautiful and rare accidental form is the Birds' Eye maple, where an inflexion of the fibre produces spots, sometimes contiguous, and sometimes a little distance apart. This wood when polished is very beautiful, and is used in various articles of cabinet work. Both these species of maple yield the sap from which sugar is made. In February, or the beginning of March, when the sap begins to ascend, holes are bored in the tree from one to two feet from the ground, and tubes of elder or sumach inserted to conduct the sap into a trough or vessel placed to receive it. The sap is collected and boiled to a syrup, after which it is allowed to cool and is strained through a cloth to separate impurities. It is then boiled again, until the syrup is reduced to the proper consistency for graining or pouring into the moulds. The colour and quality of the sugar depend much upon the care and judgment with which the process is conducted. The sap continues to flow for several weeks, but gradually becomes less abundant and less rich in saccharine matter. About four gallons of sap are estimated to yield a pound of sugar, and a single tree, having twenty tubes inserted has been known to yield twenty-three gallons of sap in a day. Large quantities of maple sugar are still made in the northern and western counties by the farmers, who sell that which they do not require for their own use to the shopkeepers of the neighbouring towns.

Striped Maple (*Acer striatum*) is rare except in the mountainous parts of the State, where it grows in cold and shaded situations. It is a small tree, with the trunk and branches covered with a smooth green bark, longitudinally marked with black stripes, by which it is easily distinguished.

Ash-leaved Maple or Box Elder, (*Acer negundo*) is not common in the eastern part of the State; but more abundant west of the mountains.

Dogwood. Of the several species of Dogwood which grow in Pennsylvania, but one is entitled from its size to be classed with the forest trees. This is the *Cornus florida*, which attains a height of twenty or thirty feet, and grows abundantly in moist, gravelly and uneven soils. In the beginning of May it is profusely covered with white flowers which add much to the beauty of our forests. The wood is of a chocolate colour, hard, compact and heavy, and is used for the handles of tools and other purposes where small, strong and hard wood is required. The inner bark has medicinal properties resembling those of the *Cinchona*, or Peruvian bark, and has been successfully used in intermitting fevers.

Magnolia. The small Magnolia or Beaver tree (*Magnolia glauca*), though common in the swamps of New Jersey, is rather rare in Pennsylvania. It seldom grows more than fifteen or twenty feet high, and is remarkable for the peculiarly agreeable scent of its flowers, which are white, and two or three inches

broad. The leaves are three or four inches long, of an oval shape, dark shining green above and light coloured beneath.

Cucumber tree (*Magnolia acuminata*) grows in the western part of the State, on the hill sides, in the narrow valleys and on the banks of streams where the atmosphere is moist and the soil deep and fertile. It sometimes reaches a height of fifty or sixty feet; the leaves are oval and pointed, six inches long and three broad; the flowers five or six inches in diameter, of a bluish white colour. The cones or fruit are of a cylindrical shape, somewhat resembling a small cucumber, from which the tree derives its name. The wood has some similarity to that of the poplar; but the tree is not sufficiently common to be much used.

One or two other species of *Magnolia* may be found in the State, but they are not common and possess no useful properties to render them worthy of special notice.

Papaw, (*Annona triloba*), though commonly appearing as a large shrub, sometimes grows to the height of twenty or thirty feet. It is rare on the Delaware, though we have seen it there,—more common along the banks of the Susquehanna; but most abundant in the rich valleys of the west. The leaves are ovate, five or six inches long, and widening from the base to the summit. It bears flowers of a purple colour; the fruit when ripe is yellowish and contains a pulp which has a sweet insipid taste.

The Poplar or Tulip tree (*Liriodendron tulipifera*) is common in Pennsylvania, and surpasses most of our forest trees in height and in the beauty of its flowers and foliage. It is often seen seventy, eighty and one hundred feet in height, three or four feet in diameter, with the trunk standing in a straight and uniform column. The heart or perfect wood of this tree is yellow, and its sap wood or alburnum white. But the nature of the soil in which it grows has so great an influence on the colour and quality of this wood, that it is commonly supposed there are two kinds of the tree, which are called White and Yellow poplar. This is, however, an error, the difference being due to the variety of soil, situation, the age of the tree and other circumstances. The timber of the poplar is highly useful and is employed for a variety of purposes. It is often used for the rafters and joists of buildings; and where pine is not easily obtained, boards of poplar are employed in the interior wood work of houses. Poplar boards are also used by coach, chair and trunkmakers, and the wood is applied to many other purposes where lightness and strength are desirable. The bark is said to possess tonic and antiseptic qualities, and a decoction of it, combined with a few drops of laudanum, has been found efficacious in giving tone and vigour to the stomach after fevers and inflammatory diseases. It has been also used in dyspepsia and cholera infantum.

Sweet Gum (*Liquidambar styraciflua*) prefers a cool fertile soil, which is exposed to temporary inundations, and grows in company with the Maple, Sour gum, Swamp White oak and Shell Bark hickory. Its leaves are five lobed and bear some resemblance

to those of the Sugar maple: the fruit is globular, about an inch in diameter, and bristling with points. The wood is not much esteemed, nor is the tree sufficiently abundant to be very useful.

Buttonwood or Sycamore (*Platanus occidentalis*) is abundant in the alluvial soils along our large streams, where it frequently grows to an enormous size. Michaux, in his North American Sylva, mentions one which he found on the banks of the Ohio, measuring forty-seven feet in circumference at four feet from the ground. The wood of this tree is not considered valuable, being liable to speedy decay unless sheltered from moisture. It is sometimes sawed into boards or joists, which when thoroughly seasoned may be used in the interior wood work of buildings. This is not the true Sycamore, though often called by that name: the European Sycamore is a species of maple (*Acer pseudo-platanus*.)

Catalpa or Bean tree (*Bignonia catalpa*) though not a native of Pennsylvania, but originally introduced from the south, seems to have become naturalized and grows abundantly along the Schuylkill and other places in the neighbourhood of Philadelphia.

Crab Apple (*Malus coronaria*), a wild apple whose nature has not been modified by cultivation, is found in most parts of the State. Its fruit is small and exceedingly acid, but makes very superior preserves when done up with sugar.

May Cherry or June Berry (*Mespilus aborea*, Mx. *Aronia botryopium*, P.) grows in our forests in moist and shady situations. It is seldom more than twenty or thirty feet high, and is chiefly noted for its fruit which is a purplish red berry, of an agreeable sweet taste, which is ripe in the latter part of May or the beginning of June, before the fruit of any other native tree or shrub.

White Birch (*Betula populifolia*) and Red Birch (*B. rubra*) both grow in this State. The latter is generally found on the banks of rivers, and is abundant along the Delaware above Philadelphia. The wood is of a compact texture, but is not considered durable, and is but little used. The young branches of the red birch are slender, tough and flexible; it is these which are used for making the brooms with which our streets are swept. Black Birch or Sweet Birch (*Betula lenta*) thrives best in deep, loose and cool soils, where it sometimes reaches a height of sixty feet. The bark of small trees and branches much resembles that of the Cherry tree, and has a sweet spicy taste. The young leaves are covered with a thick silvery down, which soon disappears. The wood is rose coloured, with a fine close grain, and bears a good polish. It is said that articles of furniture made from it acquire with time the appearance of mahogany.

Locust (*Robinia pseudo-acacia*) is a common tree in many parts of Pennsylvania, but is most abundant in limestone valleys and in places where it finds a deep rich soil. It does not, however, here grow to so large a size as in Virginia, Kentucky and Tennessee, where it may be seen sixty or seventy feet high and two or three feet in diameter. It is a beautiful tree, with light agreeable foliage, and bears clusters of sweet scented white flowers. The seeds are contained in a flat bean-shaped pod, and the young trees are

armed with short flat thorns which disappear as the tree grows older. The wood of the Locust is held in high esteem for its durability, and is in great demand for certain uses in ship building, for railroad timber, for fence posts and other purposes where a hard and durable wood is requisite. The various colours of the heart-wood of the Locust are probably owing to the soil and circumstances of its growth; that having a reddish colour being most esteemed,—that of a greenish yellow next, and that with a white heart being considered least valuable. This beautiful and useful tree is, however, subject to the attack of an insect which penetrates the bark and bores the trunk and limbs in every direction, so that they are easily broken by the wind. It seems that trees of the natural growth are not so liable to be injured in this way as those which have been transplanted; be this as it may, it is to be feared that, from the ravages of this destroyer and the neglect of the inhabitants to preserve and propagate so valuable a tree, the Locust will in time become rare even where it once grew in abundance.

Sweet Locust or Honey Locust (*Gleditsia triacanthos*) belongs peculiarly to the country west of the Allegheny mountains, but is sometimes found in the limestone valleys east of them. The leaves are pinnated, and much smaller than those of the common Locust. But the most distinguishing characteristics of this tree are the large strong thorns which cover the branches and sometimes the trunk. The large middle thorn is often two or three inches long, and has two others branching from it of about half its size. The flower is small, and the seed pods very broad, flat and long. If the wood possessed good qualities, it is not sufficiently abundant to be useful.

Sassafras (*Laurus sassafras*) is a common tree about the borders of woodlands and fence rows; but the wood being weak and brittle is not much valued. The bark of the roots is highly aromatic, and contains an essential oil which is used in medicine as a stimulant and sudorific. The bark of the tree is also aromatic, and the leaves and young branches mucilaginous.

Wild Cherry (*Prunus virginiana*) is a valuable tree when allowed to grow to a large size. The wood is much esteemed, and is used by cabinetmakers as a substitute for mahogany in the manufacture of furniture and other articles. It is of a reddish colour, compact and fine grained, bearing a handsome polish. The berries are very bitter, and the bark is a valuable tonic medicine.

Persimmon (*Diospyros virginiana*) grows most commonly in wet, heavy soils, in and about the sides of neglected fields and open grounds. It bears a round fleshy fruit, nearly an inch in diameter, of a reddish colour when ripe, which is very harsh and astringent to the taste until after a few frosts, when it becomes soft and palatable. The wood is hard, compact, strong and elastic, and is used for screws, mallets, shoe lasts, wedges, &c. The bark is tonic and astringent.

Of the Aspen tree we have several species. The American Aspen (*Populus tremuloides*) is most common in open lands where

the soil is of a middling quality. It blossoms in the latter part of April, before the leaves appear. The leaves are heart-shaped, about two inches broad, growing upon long slender petioles or stems, and are thrown into motion by the gentlest breath of air. From this almost constant tremulous movement of the leaves, the tree is frequently called Quaking Aspen. The Large Aspen (*Populus grandidentata*) and the Various-leaved Aspen (*P. heterophylla*,) are not generally abundant. The wood of this family of trees is light, soft, brittle and of little value.

Chesnut (*Castanea vesca*) is common in most parts of the State, but grows most abundantly in hilly regions, where the soil in general is gravelly and rather dry. This tree lives to a great age, and frequently attains an extraordinary size. One is said to exist on Mount Etna, which is fifty-three feet in diameter, or one hundred and sixty feet in circumference; but it is hollow within, almost to the bark. Others grow near it which are more than twenty feet in diameter. Michaux mentions one growing at Sancerre, in France, which at six feet from the ground measures thirty feet in circumference, and which, though supposed to be more than one thousand years old, is perfectly sound, and bears fruit annually. The wood of the chesnut tree is strong, considering its lightness and porosity, and is especially valuable on account of its durability. It is much esteemed for fences, as posts and rails made from it last longer than those from any of the common forest trees, and are only excelled in this respect by the locust, cedar, and perhaps, a few other kinds of more rare timber. It is not held in much estimation for firewood, but is largely used in the manufacture of charcoal for the supply of the iron works in the interior of the State. Being of rapid growth, this timber soon renews itself on the coaling grounds, and will bear cutting every sixteen or twenty years.

Chincapin, (*Castanea pumila*) though abundant in Maryland and the states farther south, is not much known in Pennsylvania, except in some of the southern counties. It is a small tree, or more generally appears in the form of a large shrub, from seven to twelve feet in height, and is only worthy of notice on account of its fruit, the outer covering of which resembles that of the chesnut, only half as large. The nut is convex on both sides, like an acorn; it is sold in the markets, but is less esteemed than the chesnut.

White Beech (*Fagus sylvestris*) and Red Beech (*Fagus ferruginea*) are both found in Pennsylvania; the latter being most abundant in the northern part of the State. The white beech prefers a deep moist soil and cool situations, generally growing in low grounds and along the borders of streams. The heart or perfect wood of this species bears a small proportion to the sap, frequently occupying but a few inches in the trunk of a large tree. The seeds of the white beech are ovate triangular and obtuse at the smaller end; those of the red beech are acutely triangular and pointed at the end. The heart-wood of the red beech occupies most of the trunk, and the wood is stronger, tougher and more

compact. It is, however, liable to injury from worms, to speedy decay when exposed to changes of dryness and moisture, and is seldom used in building. It is employed for various kinds of tools, shoe lasts, the boards of wool cards, and other purposes. It makes good fuel when dry, and is said to yield excellent charcoal.

Hornbeam (*Carpinus americana*) and Iron Wood (*C. ostrya*) are not uncommon in low moist grounds. They are small trees and not particularly useful, though the wood is white, compact and fine grained. The seeds are borne in clusters resembling hops.

Of the Sour Gum we have two species, the Black Gum (*Nyssa sylvatica*) and the Tupelo or Sour Gum (*Nyssa aquatica*). The black gum is usually a larger tree, and grows on more elevated grounds than the latter, which prefers the borders of swamps and wet soils. The fibres of the wood are peculiarly twisted and interwoven, which renders it very difficult to split: for this reason it is frequently used for the hubs of wagon and carriage wheels, and also for hatters' blocks. As a fuel it consumes very slowly, and is often used for the back logs in fireplaces.

Red Mulberry (*Morus rubra*) is not uncommon in fertile soils, where it sometimes attains a considerable size. Though belonging to the order *monœcia*, the fertile and barren flowers frequently grow on separate trees, which is the reason why some mulberry trees never bear fruit. The wood is yellow, strong and compact, and when seasoned is almost or quite equal to the locust in durability.

Of the Ash we have several species: the White Ash (*Fraxinus americana*), the Red Ash (*F. tomentosa*) and the Black Ash (*F. sambucifolia*) being the most common. The wood of the white and red ash is highly esteemed for its strength and elasticity, and is advantageously employed for a great variety of uses by coach-makers and the manufacturers of many agricultural implements, in which strength, elasticity and lightness are required. It is preferred to any other wood for oars, and is used for handspikes and the blocks of pulleys. The wood of the black ash is of a brown colour, and not so much used as that of the other species.

Willow of several kinds grows in Pennsylvania, besides some species introduced from Europe, but we shall not notice them particularly, as they are applied to few useful purposes, except the twigs of some species of which baskets are made; and for the manufacture of charcoal for making gunpowder.

White Elm (*Ulmus americana*) grows in moist and fertile grounds in company with the maple, gum, shell bark hickory, and such trees as delight in similar situations. It frequently attains a great height, and is a noble tree with long, flexible, pendulous branches, forming a top of fair proportions and great beauty. The wood is of a brown colour, and being inferior in solidity, hardness and strength to many other kinds, is not much employed by mechanics. Red elm, Slippery elm (*Ulmus rubra* or *fulva*) has larger, thicker, and rougher leaves than the white elm; the bark is also of a darker colour. The wood has a dull red tinge, and is rather coarser grained and less compact, but is said to be more durable than that of the other species. The inner bark, when soaked or chewed,

yields a great amount of mucilage, and is used in medical prescriptions on that account.

The Linden, Lime tree or Bass wood (*Tilia americana*) is not uncommon along the banks of rivers and in deep rich soils. There is another species called the White linden (*Tilia alba*) which much resembles the former, but is a smaller tree, and has the underside of the leaves whitish. Neither species is abundant, nor does the wood possess qualities to render it much esteemed.

Pines. The Pitch Pine (*Pinus rigida*) and Scrub Pine (*P. inops*) are most common in light, sandy or stony soils, and on barren mountain ridges. They are not usually distinguished from each other, being both called by the names of pitch pine or yellow pine. The true Yellow pine (*Pinus mitis*) is not very common in Pennsylvania; but grows abundantly in the sandy soil of the lower part of New Jersey and the eastern shore of Maryland, where the pitch pine also abounds. The leaves of the yellow pine grow in pairs, (seldom in threes) and are four or five inches long; while those of the pitch pine are in threes, and usually shorter. The buds of the pitch pine are always resinous; the bark is thick, dark coloured and deeply furrowed. It has many branches, occupying two-thirds of the trunk, on which account the wood is usually knotty. On mountains and gravelly lands the wood is compact, heavy, and filled with resin; but in wet grounds it is lighter, softer, contains but little heart-wood, and is called sap pine. The timber of this species is not so valuable as that of the true yellow pine; but is used for sawing into boards and scantling. It makes an excellent fuel for purposes where a brisk flame is required, and is much used for heating steamboilers, bakers' ovens, and for burning bricks. In those parts of the State where this tree is abundant, tar is manufactured from the more resinous parts of it. The scrub pine, sometimes called Jersey pine, is smaller than the pitch pine; its bark is blackish, and its limbs remote from each other. The leaves are in pairs, one or two inches long, stiff, and scattered over the young branches, which are flexible and smooth, while those of the other species are scaly. The wood contains a large proportion of sap, and is not of much use except for fire-wood.

White Pine (*Pinus strobus*), though much less abundant in Pennsylvania than formerly, is still found growing in considerable quantity on the upper streams of the Lehigh, the head waters of the Susquehanna, and some of the tributaries of the Allegheny. It is also found in other places, but thinly interspersed among the other forest trees. Its value as a timber for manufacturing boards, shingles and other lumber has caused it to be eagerly sought after, and such enormous quantities of it have for years been cut and floated down our rivers to market, that this noble tree has now become comparatively scarce in those parts of the State where it formerly grew in abundance. It is probable that in forty or fifty years but few trees of this species will remain, fit for making good lumber, and that some substitute must be found for a timber now so universally useful. The height to which this ancient and

majestic inhabitant of our forests attains is almost incredible: on viewing from a distance the timber lands where it grows, the summits of the pines may be seen towering far above the surrounding trees, and lifting their noble heads majestically above their meaner and more humble companions. Trunks are frequently felled measuring from one hundred to one hundred and fifty feet in length and four or five feet in diameter at the base. When this tree grows in thick and crowded forests it is almost destitute of branches to near the top; but when growing alone, or more widely separated from other trees, the branches are numerous and verticillate, or disposed opposite to each other around the trunk at intervals, forming a fine cone-shaped top. The leaves, like those of the other pines, spring from a little sheath, each of which, in this species, contains five leaves about four or five inches long, slender, and of a bluish-green colour which is peculiarly delicate and beautiful on young shoots, early in the season. The wood of the white pine possesses many desirable qualities; it is white, soft, free from knots, easily wrought, durable, and not so liable to split when exposed to the sun as many other kinds of timber. The quality of the wood, like that of most other trees, differs according to the soil and situation in which it grows. In loose, deep and moist grounds, it is lighter and of finer texture, and may be worked more easily and smoothly; while that growing on more elevated and dry soils has a harder, firmer and more resinous wood, with a coarser grain. It is not necessary, nor would it be possible, to mention the endless variety of objects to which this useful wood is applied in architecture, ship-building, carpentry, cabinet-making and other mechanic arts.

Black or Double Spruce (*Abies nigra*) is rare except in cold and moist soils on the high table-lands or mountain flats in the northern part of the State. It is, perhaps, most abundant in the mossy swamps on the waters of the Lehigh, in Monroe, Pike, and Luzerne counties. This is a beautiful tree, growing to a height of sixty or seventy feet, with a smooth straight trunk and a pyramidal top. Its wood resembles that of the white pine, and is used for masts, boards, shingles and building timber.

Hemlock Spruce (*Abies canadensis*) is common in most parts of the State in dark and shaded situations, on the steep banks of streams. In the northern counties, and on the elevated range of the Allegheny mountains, it grows abundantly on the high lands among the beeches and sugar maples, where it attains a large size, the older trees being often seventy or eighty feet high and five feet or more in diameter. The properties of the wood are such as to give it only a secondary importance: it is coarse grained, very liable to split, and the old trees frequently have the concentric circles or *growths* separated at intervals, or as it is termed, "wind-shaken," which renders the timber splintery and much diminishes its usefulness. The woody fibre of the hemlock is frequently oblique, running spirally round the stock of the tree, which prevents its splitting in a straight line: this is a serious defect, as when sawed into boards or scantling it renders them "cross

grained" and greatly impairs their strength. But notwithstanding these defects, as the white pine becomes more scarce, the hemlock is substituted for it wherever it can well be done. For the frame work of buildings, where not exposed to the weather, it answers well, as when sound it is sufficiently strong, and being harder and firmer than pine, it affords a tighter hold to nails. The bark is used in tanning leather, and it is asserted by some that hemlock and oak bark mixed together are better for that purpose than either alone.

Tamarack, or American Larch (*Larix americana*) is a small but graceful tree, growing in cool mountain swamps; but even there it is not very common, and never attains the size to which it grows about Hudson's Bay and Newfoundland. Our climate is too warm for its northern constitution. It is not an evergreen, like most resinous trees; but sheds its leaves in the fall and renews them in the spring. Its wood, in regions where it grows to a sufficient size to be useful, is considered superior to any species of pine or spruce, being very strong and durable.

Red Cedar (*Juniperus virginiana*) is common in most parts of Pennsylvania; but seldom grows large enough to make its wood of much use. The branches are numerous and close, growing near the earth and spreading out horizontally. The trunk decreases rapidly in size as it ascends, and is often irregularly indented by deep crevices or furrows. If the tree, when young, were trimmed to two-thirds of its height, the size and regularity of the trunk might be improved. The wood is red, odorous, compact, fine-grained and exceedingly durable: it is, therefore, valuable and highly esteemed for making posts and for other purposes in which its qualities are desirable.

Many of our ornamental and shade trees are not natives, but have been introduced from abroad. Among these are the Lombardy and Athenian Poplars, (*Populus dilatata* and *P. græca*;) the Paper Mulberry, (*Broussonetia papyrifera*;) the Horse Chesnut, (*Æsculus hippocastanum*;) the European Linden, (*Tilia europea*;) Chinese Ailanthus, (*Ailanthus glandulosa*;) and others.

Shrubs and Herbaceous Plants.

The method of arranging plants together in Natural Orders according to the system of Jussieu, as improved by Lindley and other eminent botanists, affords so many advantages that we shall adopt it in the following short notice of some of the more common or remarkable genera and species which grow in Pennsylvania. By this method plants are brought together in groups or families, in which the different individuals resemble each other in their external appearance and internal structure, as well as their general qualities and medicinal properties. The artificial system of Linnæus, however, affords invaluable aid in determining the genus and species of a plant, and no student of botany should neglect to make himself familiar with both the natural and artificial systems.

Those introduced plants which have become naturalized in our State are marked thus * for the purpose of distinction.

RANUNCULACEÆ. The Crowfoot tribe.

Crowfoot, *Ranunculus*, many species; generally in moist low grounds; fl. May, June.
 Wind flower, *Anemone*, several species; woodlands and fence rows; fl. April, July.
 Liverwort, *Hepatica triloba*; open woods; April.
 Columbine, *Aquilegia canadensis*; shady rocky banks; May.
 Virgin's bower, *Clematis virginiana*; climbing vine; thickets and fence rows; Aug.
 Marsh marygold, *Caltha palustris*; about springs and wet meadows. April.
 Black snake-root, *Actæa racemosa*; tall; flowers in white spikes; woods; June.
 Meadow rue, *Thalictrum*; several species; meadows and woods. May, June.

PODOPHYLLACEÆ.

May apple, *Podophyllum peltatum*; moist woods and meadows; May: root cathartic.

NYMPHÆACEÆ. The Water-lily tribe.

White water-lily, *Nymphaea odorata*; in ponds; July.
 Spatter dock, *Nuphar advena*; ponds and rivers; June, Sept.

PAPAVERACEÆ. The Poppy tribe.

Blood-root, *Sanguinaria canadensis*; open woods; April; root medicinal.

CRUCIFERÆ. The Cruciferous tribe. (Petals four, in the form of a cross.)

Winter cress, *Barbarea*; Wall cress, *Arabis*; Spring cress; *Cardamine*; several species.

Tooth wort, *Dentaria lactiniata*; rich woodlands; April.

*Shepherd's purse, *Capella bursa-pastoris*; fields and waste places; April, Sept.

*Pepper grass, *Lepidium*; Mustard, *Sinapis*; Radish, *Raphanus*; Cabbage, *Brassica*; and several other introduced garden plants also belong to this order.

POLYGALACEÆ. The Milk wort tribe.

Seneca snake-root, *Polygala senega*; dry hilly woods; May.

Purple milk wort, *P. purpurea*; fields and meadows; July: and some other species.

VIOLACEÆ. The Violet tribe.

Violet, *Viola*, many species; woods and meadows; Apr. May, June.

HYPERICACEÆ. The John's wort tribe.

John's wort, *Hypericum*; several species. The *H. perforatum* is common in fields and pastures and is acrid, producing sores on horses and cattle which have white feet and noses, the skin of such being more tender than others.

CARYOPHYLLACEÆ. The Pink tribe.

Catch-fly, *Silene antirrhina*; viscid; dry sandy fields; June: other species.

Four leaved campion; *S. stellata* (*Cucubalus*); dry woodlands. July.

*Cockle, *Agrostemma githago*; fields, among grain; June.

PORTULACACEÆ. The Purslane tribe.

*Purslane, *Portulaca oleracea*; gardens and cultivated grounds; July.

Spring beauty, *Claytonia virginica*; moist low grounds; April.

GERANIACEÆ. The Geranium tribe.

Crane's bill, *Geranium maculatum*; woods and meadows; May; other species.

BALSAMINACEÆ.

Snap weed, Touch-me-not, *Impatiens*, two species; wet shady places; July.

OXALIDACEÆ. The Sorrel tribe.

Sorrel, *Oxalis*, several species; woods and fields; May, June.

ANACARDIACEÆ.

Stag's horn sumac, *Rhus typhina*; rocky hills; June; branches hairy.

Mountain sumac, *R. copallina*; dry rocky hills; July.

Common sumac, *R. glabra*; old fields and fence rows; used in tanning morocco.

Poison sumac, *R. venenata*; low grounds along streams; June.

Poison vine, *R. radicans*; woods and fence rows; May, June.

MALVACEÆ. The Mallow tribe.

*Mallows, *Malva*; Hollyhock, *Althæa*; *Hibiscus*, &c. are introduced plants.

VITACEÆ. The Vine tribe.

Fox Grape, *Vitis labrusca*; Chicken grape, *V. vulpina*; and other species.

Creeping, False grape; *Ampelopsis quinquefolia*; woods, thickets and fences; July.

CELASTRACEÆ.

False bittersweet, *Celastrus scandens*; climbing shrub; woods and fences; June.

Burning bush, *Euonymus*, two species; woods; June.

RHAMNACEÆ.

New Jersey Tea, *Ceanothus americanus*; small shrub; woods; June.

LEGUMINOSÆ. The Bean tribe.

Wild bean, *Phaseolus perennis*; woods; July. Also *Vicia*, *Aptos*, *Amphicarpa*.

Goat's rue, *Tephrosia virginiana*; dry hilly woods; July.

*Clover, *Trifolium*, several species, most of which are introduced plants.

Wood trefoil, *Desmodium*, (*Hedysarum*) many species; woods; Aug.

Bush clover, *Lespedeza*, five or six species; dry hills and woods; Aug.

Rattle-box, *Orotalaria sagittalis*; dry and sandy fields and woods; July.

Wild indigo, *Baptisia tinctoria*; dry hilly woods; July, Aug.

Wild senna, *Cassia marilandica*; low alluvial grounds; Aug.; medicinal.

Wild sensitive-plant, *Cassia nictitans*; small; dry sandy places; Aug.

Partridge pea; *Cassia chamaecrista*; dry sandy soils; July.

ROSACEÆ. The Rose tribe.

Nine bark, *Spiræa opulifolia*; shrub; low moist grounds; June.
 Meadow sweet, *S. salsifolia*; low wet places; June: other species.
 Indian physic, *Gillenla trifoliata*; woods and thickets; medicinal.
 Cinquefoil, *Potentilla*, several species; fields and woods; May, July.
 Strawberry, *Fragaria virginiana*; fields, fence rows, &c. May.
 Raspberry, *Rubus occidentalis* and other species; fences and borders of woods; May.
 Flowering raspberry, *R. odoratus*; flowers large; thornless; rocky hills: June, Aug.
 Blackberry, *R. villosus*, and other species; borders of fields; May, June.
 Dewberry or running brier; *R. trivialis*; old fields; May, June.
 Wild rose, *Rosa parviflora*; borders of woods and old fields; June.
 Swamp rose, *R. carolina*; thickets and wet grounds; June, July.
 *Sweet brier, Eglantine, *R. rubiginosa*; road sides and dry banks; June.
 Hawthorn, *Crataegus*, several species; borders of woods, &c. May, June.
 Red plum, *Prunus americana*; low grounds about meadows, &c. April.
 To this order also belong the Cherry, *Cerasus*; Apple and Pear, *Pyrus*.

ONAGRACEÆ. Evening primrose tribe.

Evening primrose, *Oenothera biennis* and other species; fields, &c. June, July.
 Willow-herb, *Epilobium*, several species; moist grounds; July, Aug.
 Enchanter's night-shade, *Circea lutetiana*; moist shady woods; July.

GROSSULARIACEÆ. The Currant tribe.

Wild currant, *Ribes floridum*; borders of woods; May: berries black.
 Wild gooseberry, *R. rotundifolium*; mountains and rocky woods; May.

SAXIFRAGACEÆ. The Saxifrage tribe.

Saxifrage, *Saxifraga virginica*; dry rocky banks and woods; April.
 Tall saxifrage, *S. pennsylvanica*; wet meadows; May.
 Golden saxifrage, *Chrysosplenium oppositifolium*; springs and brooks; May.
 Alum root, *Heuchera americana*; woods; June: root astringent.

HAMAMELACEÆ.

Witch hazel, *Hamamelis virginica*; shrub; moist woods and thickets: the flowers appear in Autumn after the leaves have fallen, and the seeds ripen the next season.

UMBELLIFERÆ. The Umbelliferous tribe.

Water hemlock, *Cicuta maculata*; meadows and wet grounds; July: poisonous.
 Water parsnep, *Sium latifolium*; low grounds, along streams; July.
 Angelica, *Angelica atropurpurea*; stem purple; meadows; June.
 Cow parsnep, *Heracleum lanatum*; large; low grounds; June: called poisonous.
 *Wild parsnep, *Pastinaca sativa*, and Wild carrot, *Daucus carota*, have escaped from the gardens and become naturalized. The latter is troublesome in fields.
 *Poison hemlock, *Conium maculatum*; waste places about buildings; July.

ARALIACEÆ. The Aralia tribe.

False sarsaparilla, *Aralia nudicaulis*; rich rocky woodlands; May.
 Spikenard, *A. racemosa*; moist rich woods; July.
 Ginseng, *Panax quinquefolium*; rich woods; July: rare in the eastern counties.
 Dwarf ginseng, *P. trifolium*; moist shady woods; April; root globular.

CAPRIFOLIACEÆ. The Honeysuckle tribe.

Honeysuckle, *Lonicera*, several species; rocky woods; May, June.
 Horse gentian, Fever root, *Triosteum perfoliatum*; woods; May: root medicinal.
 Black haw, Sloe, *Viburnum prunifolium*; small tree; thickets; May.
 Arrow wood, *V. acerifolium*; woods; June.
 Hobble bush, *V. lantanoides*; mountain woods; June: (other species of V.)
 Common elder, *Sambucus canadensis*; thickets and fence rows; June.
 Red berried elder, *S. pubens*; mountains; May.

RUBIACEÆ.

Partridge berry, *Mitchella repens*; creeping evergreen; woods. June.
 Button bush, *Cephalanthus occidentalis*; shrub; swamps and streams; July.
 Bed straw, Goose grass, *Galium*, eight or nine species, moist shady places; July.
 Innocence, *Hedyotis cerulea* (*Houstonia*); fl. small, blue; grassy banks. April, Sept.

DIPSACEÆ.

*Wild teasel, *Dipsacus sylvestris*; road sides and waste places; July.

COMPOSITEÆ.

Thistle, *Carduus*, several species; fields, fence rows, &c. June, Aug.
 Wild lettuce, *Lactuca elongata*; thickets and fences; July.
 *Dandelion, *Leontodon taraxacum*; road sides and pastures; April, Sept.
 Lion's-foot, *Prenanthes alba*; dry woods and clearings; Aug.
 Sow thistle, *Sonchus*, several species; woods and cultivated grounds; Aug.
 Hawk-weed, *Hieracium venosum*; leaves red veined; woods; May: other species.
 Meadow iron weed, *Vernonia noveboracensis*; tall; fl. purple; low grounds, Aug.
 Blue blazing-star, *Liatris spicata*; moist grounds, borders of woods; Aug.
 Boneset, *Eupatorium perfoliatum*; meadows and low grounds; Aug.: medicinal.
 Golden rod, *Solidago*, many species; fields, woods, &c. Aug., Sept.
 Star-flower, *Aster*, many species; woods, fields and meadows. Aug., Sept.
 Flea bane, *Erigeron*, several species; fields and woods; June, Aug.

*Elecampane, *Inula helentium*; farms and road sides; July.

Clot-bur; *Xanthium strumarium*; *X. spinosum* has ternate thorns; farm yards, Aug.

Rag-weed, *Ambrosia*, two species; fields and fence rows; Aug.

Wild sun-flower, *Helianthus*; woods and thickets; July, Aug.

Heliopsis, *Rudbeckia*, *Helenium*, &c. are sunflower like.

Spanish needle, Bur marygold, *Bidens*, several species; low grounds, &c. Aug.

*Yarrow, *Achillea millefolium*; pastures and fences; June, Sept.

*Ox-eye daisy, *Chrysanthemum leucanthemum*; fields and meadows; June.

*Wild chamomile, Hog-weed, *Anthemis cotula*; farm yards, lanes, &c. June.

Sweet Balsam, *Grappholum polycephalum*; old fields, &c. Aug; other species.

Groundsel, *Senecio*, several species; moist grounds; May, June, July.

Indian plantain, *Cacalia atriplicifolia*; tall; moist shady places; July, Aug.

LOBELIACEÆ.

Indian tobacco, *Lobelia inflata*; pastures and road sides; July, Sept; medicinal.

Cardinal flower, *L. cardinalis*; bright crimson; wet places; July, Sept. other species.

ERICACEÆ.

Spicy winter-green, Teaberry, *Gaultheria procumbens*; mountains and dry hills; June.

Ground laurel, *Epigaea repens*; creeping evergreen; hilly woods; April

Pepper bush, *Andromeda*; several species; woods and thickets; June.

Laurel, Calico bush; *Kalmia latifolia*; rocky hills; May, June.

Dwarf laurel, *K. angustifolia*; low moist grounds; June: said to be poisonous to sheep.

Large or mountain laurel, *Rhododendron maximum*; moist grounds along creeks and rivers, but largest in mountain swamps, where it sometimes forms almost impenetrable thickets: flowers in large clusters,—pale rose coloured; June, July.

Bush honeysuckle, *Rhododendron (Azalea)* several species; woods; May, June.

VACCINEÆ.

Whortleberry or Huckleberry, *Vaccinium*, several species; woods; May, June.

Cranberry, *Oxycoccus macrocarpus*; swamps; June; not common.

PYROLÆ.

Winter-green, Shin-leaf, *Pyrola*, several species; woods; June, July.

Pipsissawa, *Chimaphila*, two species; woodlands; June.

ASCLEPIADÆ.

Milk-weed, Swallow wort, *Asclepias*, many species; woods and fields; June, July

Pleurisy root, *Asclepias tuberosa*, not milky; fl. orange colour; fields and fences; July.

GENTIANACEÆ.

Soapwort gentian, *Gentiana saponaria*; low wet places; Sept.—root tonic.

Fringed gentian, *G. crinita*; fl. handsome; blue; hilly open woods; Sept.

Centaurry, *Sabbatia angularis*; old fields; July: bitter and tonic.

CONVOLVULACEÆ.

Bindweed, *Convolvulus*, twining vine; dry sandy soils; June, July; several species.

Dodder, *Cuscuta americana*, small yellow vine; parasitic; moist low grounds; Aug.

*Flax vine, *Cuscuta europea*?—parasitic on flax; June.

BORAGINACEÆ.

Lung-wort, *Pulmonaria virginica*; sandy low grounds; April, May.

Hound's tongue, *Cynoglossum virginicum*; rich woodlands; May, June.

**C. officinale*; road sides, about buildings, &c. May.

Forget-me-not, *Myosotis palustris*; fl. small, blue; ditches and wet grounds; May, Aug.

LABIATÆ. The Mint tribe.

*Spear mint *Mentha viridis*; moist grounds and along streams; July, Aug.

*Pepper mint, *M. piperita*; stem purple; wet places; Aug.

Horse mint, *Monarda*, several species; borders of woods and thickets; July, Aug.

Wild basil, *Pycnanthemum*, several species; woods and thickets; July, Aug.

Horse balm, *Collinsonia canadensis*; rich shady woods; July, Aug.

Dittany, *Cunila mariana*; dry hilly woods; diaphoretic.

Pennyroyal, *Hedeoma pulegioides*; old fields, dry soils; Aug: diaphoretic.

Self-heal, *Prunella vulgaris*; woods, road sides, &c.

Scull cap, *Scutellaria*; several species; woods, thickets & low grounds; June, Aug.

*Catnep, *Nepeta cataria*; fence rows, and cultivated lots; July, Aug.

*Ground ivy, *N. glehoma*; about fences and shady places; May, June.

*Dead nettle, *Lamium amplexicaule*; cultivated lots, April, May.

Hedge nettle, *Stachys*, several species; moist grounds; July, Aug.

Blue curls, *Trichostema dichotoma*; old fields, Aug.

Germander, Wood sage, *Teucrium canadense*; moist shady grounds; July.

SCROPHULARIACEÆ.

Fig-wort, *Scrophularia marilandica*; woods and fences; July.

*Toad flax, Ranstead weed; *Linaria vulgaris (Antirrhinum)* pastures and fences; June.

Monkey flower, *Mimulus*, two species; meadows and wet places; Aug.

Snake-head, *Chelone glabra*; swamps and streams; Aug.

Yellow fox-glove, *Gerardia flava*; woods; July; *G. purpurea*; swamps; Aug: other species.

Speedwell, *Veronica*; several species; generally in moist grounds; May, June.

OROBANCHÆ.

Squaw-root, *Cancer-root*; *Orobanche*, two species; May, June.
Beech-drops, *Epiphegus americanus*; under beech trees. Sept. Astringent.

VERBENACEÆ.

Vervain, *Verbena*, several species; road sides, low grounds, &c. July, Aug.
Lopseed, *Phryma leptostachya*; borders of woods; July.

PRIMULACÆ.

Loose-strife, *Lysimachia*, several species; borders of woods and low grounds; June, July.

PLANTAGINÆ.

Plantain, *Plantago*, several species; fields, &c. June—Sept.
*Ripple, Buck-horn, *P. lanceolata*; clover and pasture fields.

PHYTOLACCÆ.

Poke-weed, *Phytolacca decandra*; rich soils, borders of woods, &c. June, Sept.

POLYGONACÆ.

Knot-weed, *Polygonum*; many species; road sides, moist grounds, &c. June, Sept.
*Buckwheat, *P. jagopyrum*, cultivated fields; Aug, Sept.
Wild buckwheat vine, *P. scandens*, moist thickets; *P. convolvulus*; fields, &c., July.
Dock, *Rumex*; several species; cultivated grounds and moist places; June, July.
Sheep sorrel, *R. acetosella*; dry sandy soils, fields and road sides; May.

LAURACEÆ.

Spice wood, *Laurus benzoin*; shrub; moist grounds; April: aromatic stimulant.

ARISTOLOCHIÆ.

Virginia snake root, *Aristolochia serpentaria*; woods; June: root aromatic.
Wild ginger, Colt's foot, *Asarum canadense*; woods; May: root strongly aromatic.

THYMELACÆ.

Leather-wood, *Ditca palustris*; swampy woods; shrub: bark very tough.

EUPHORBIACÆ.

Spurge, *Euphorbia*, several species; milky; fields and road sides; July.

URTICACÆ.

Nettle, *Urtica*, several species; False nettle, *Boehmeria cylindrica*; July.
Hop vine, *Humulus lupulus*; gardens and wild in thickets; July, Aug.

SAURURACÆ.

Lizard-tail, *Saururus cernuus*; swamps and streams; July.

AMENTACÆ: mostly trees.

Hazel-nut, *Corylus americana*; thickets and fence rows; April.
Alder, *Alnus serrulata*; swamps and streams; April.
Sweet fern, *Comptonia asplenifolia*; shrubby; dry hills and woods; April.

IRIDACEÆ.

Blue flag, *Iris*, two or three species; wet grounds; June.
Blue-eyed grass, *Sisyrinchium*, two species; woods and meadows; May, June.

ORCHIDÆ.

Orchis, *Orchis spectabilis*; rich woodlands; May.
Habenaria, *Habenaria*; several species: moist low grounds; June, July.
Tway-blade, *Liparis lilifolia* (*Malaxis*); moist woods; June.
Coral root, *Corallorhiza*, several species; woodlands; May, Aug.
Rattlesnake-plantain, *Gootyera pubescens*; leaves white veined; woods; July.
Lady's tresses, *Spiranthes*, (*Neottia*) meadows and moist open woods; July, Aug.
Moccasin flower, *Cypripedium*; two or three species; woods and thickets; May, June.
The genera *Arethusa*, *Pogonia*, *Calopogon*, *Triphora*, &c. also belong to this order: growing mostly in swamps and moist thickets; not very common; flowers curious and beautiful.

MELANTHACÆ.

Black flower, *Melanthium virginicum*; wet meadows: July.
Indian poke, White hellebore, *Veratrum viride*; swamps and thickets; May.
Blazing star, *Helonias*, two or three species; meadows and wet grounds; May, June.

TRILLIACÆ.

Three leaved nightshade, *Trillium*, several species; moist shady woods; May.
Indian cucumber, *Gyromia virginica* (*Medeola*); shady moist grounds; June.

LILIACÆ.

Wild lily, *Lilium*, several species; meadows and borders of woods, June, July.
Dog-tooth violet, *Erythronium americanum*; moist low grounds; April.
Solomon's seal, *Convallaria*, several species, woods and moist grounds; May June.
Bell-wort, *Uvularia*, two species; woods and meadow banks; May.
Star grass, *Aletris farinosa*; open woods and borders of thickets; July.
Garlic, *Allium*, several species; pastures, woods and meadows; June, July.

ALISMACEÆ.

Arrow-head, *Sagittaria*; species and varieties; ditches and wet grounds; July, Aug.
Water plantain, *Alisma plantago*; rivulets and wet places; July.

JUNCÆ.

Rush, *Juncus*, various species; wet low grounds; June, July.

SMILACÆ.

Green brier, *Smilax*, several species, moist thickets, &c. May, June.

AROIDÆ.

Indian turnep, *Arum triphyllum*; moist shady places; May; medicinal.
 Green dragon, *A. dracontium*; alluvial grounds; May, June.
 Skunk cabbage, *Symplocarpus fetida*; low wet places; Feb., March; medicinal.
 Golden club, *Orontium aquaticum*; in ponds and streams; May.
 Calamus, *Acorus calamus*; swampy meadows; May, June; Aromatic.

TYPHACEÆ.

Cat-tail, *Typha*, two species; about ponds and wet places; June.
 Bur-reed, *Sparganium*, one or two species; ponds and streams, July.

FLUVIALES.

Pond-weed, *Potamogeton*; several species; in water of ponds and slow streams, July.

CYPERACEÆ. The Sedge tribe.

This order includes *Cyperus*, *Scirpus*, *Eriophorum* and other genera of coarse rough swamp grasses. The genus *Carex*, Sedge Grass, of which we have a great number of species, also belong to it.

GRAMINEÆ. The Grass tribe.

In this order are included the grasses proper and the cereal grains, such as wheat, rye, oats, barley, &c. Many of these, however, are not native plants, but have been introduced by agriculturists and have become naturalized. A few only of the more common kinds will be enumerated.

*Crab-grass, *Digitaria*, two species; cultivated grounds; July.

*Fox-tail grass, *Setaria (Pennisetum)*; stubble fields, &c. July; sometimes called crab-grass.

Poverty-grass, *Aristida*, dry sterile fields; Aug.

*Herd-grass, Red-top, *Agrostis*; pastures and meadows; July.

*Timothy, *Phleum pratense*; fields and meadows; July.

*Sweet scented Vernal-grass, *Anthoxanthum odoratum*; meadows, &c. June.

*Soft-grass, Feather-grass, *Holcus lanatus*; light coloured, downy; meadows; June, July.

*Oats, *Avena*; cultivated; July.

Oat-grass, *Danthonia spicata*; dry banks, borders of woods, &c. June.

*Cheat, or chess, *Bromus secalinus*; cultivated grounds among wheat and rye; June.

Respecting the last named species, Dr. Darlington, an eminent botanist of Chester county in this State, makes the following observation. "This well known troublesome grass is a naturalized foreigner, and obstinately accompanies our crops of wheat and rye. Frequently when the wheat has been injured by the winter, or other cause, the *Bromus* is very abundant; and many farmers are so little acquainted with the laws of nature,—and therefore prone to absurd mistakes,—that they imagine the wheat has been transformed into *Bromus* or Cheat. This vulgar error also prevails among the peasantry of Europe: but in the old world, they think the wheat is transmuted into *Lolium temulentum*, or Darnel,—quite a distinct grass from *Bromus*,—and which is yet rare in the United States."

Spear-grass, Green-grass, *Poa pratensis*; meadows, fields, &c. May, June.

Blue-grass, *Poa compressa*; fields and pastures; June. (Several other species of *Poa*.)

*Orchard-grass, *Dactylis glomerata*; fields, meadows, &c. May, June.

*Dog's-tail-grass, *Eleusine indica*; lanes, foot paths, &c. July, Aug.

*Rye, *Secale cereale*; cultivated fields; June. Diseased black seeds used in medicine.

Wild-rye, *Elymus*, several species; banks of streams, &c. July.

*Wheat, *Triticum sativum*; cultivated fields; June.

*Barley, *Hordeum*, two species; fields; May, June.

Wood-grass, *Andropogon*, several species; old fields and sterile soils; Aug. Sept.

White grass, Rice grass, *Leersia*, two species; borders of swamps and ditches; Aug.

Water Oats, Wild-rice, Reed, *Zizania aquatica*; streams and swamps. Aug.

Indian corn, *Zea mays*; cultivated; July, Aug.

EQUISETACEÆ.

Scouring rush, *Equisetum hyemale*; swamps and moist grounds; June.

Horse-tail, *Equisetum arvense*; low grounds; April. (other species.)

FILICES. The Fern tribe.

Polypody, *Polypodium*, several species; moist rocky woods; July.

Shield fern, *Aspidium*, several species; moist woods and thickets; July.

Spleen fern, *Asplenium*, various species; shady rocky woods; July.

Brake, or Bracken, *Pteris*, two species; woods and thickets; June, July.

Maiden hair, *Adiantum pedatum*; shady rocky woods; July.

Flowering fern, *Osmunda*, three species; moist low grounds; July.

Adders-tongue, *Ophioglossum vulgatum*; moist low grounds and thickets; June.

Rattle-snake fern, *Botrychium virginicum*; woods and rocky hills; May, June.

Botrychium fumarioides; moist grounds, woods, &c. July, Aug.

LYCOPODIACEÆ.

Club moss, *Lycopodium*, several species; woods and thickets; July.

What is said of the utility of the oak tree? For what purposes are its wood and bark useful? Which kind of oak is most esteemed, and why? What is said of the post oak?—Swamp white oak?—Swamp chesnut oak? Rock chesnut oak?—Laurel oak? Where does the scrub oak grow abundantly? For what is Spanish oak valuable? What is said of black oak, and of its bark? Describe the scarlet oak and tell how it may be distinguished from the Spanish and the red oak. Mention the principal characters of the red oak. Where does the pin oak grow, and what is said of it? Give a description of the black walnut, and the qualities of its wood. For what is the white walnut tree useful? What are the properties of hickory wood, and for what purpose valuable?—Mention the different kinds of hickory? How may we distinguish the red and white maple? What is said of the wood and bark of the maple? What varieties of sugar maple have we, and where do they grow? What ornamental wood is obtained from the sugar maple? Describe the process of obtaining sap and making sugar from the maple. What other kinds of maple are mentioned, and where do they grow? What is said of the small magnolia?—Of the cucumber tree? Of the papaw? Describe the poplar or tulip tree, and the uses of its wood and bark? In what places does the sweet gum tree grow? What is said of the button wood or sycamore?—Of the catalpa?—Of the crab apple?—Of the may cherry and its fruit? Mention three kinds of birch, and the characters of each? Where does the locust tree grow most abundantly, and what is said of its wood? How does the sweet or honey locust differ from the other? What is said of the wood and bark of the sassafras?—Of the wild cherry? Where does the persimmon grow, and what is said of it? Mention the different species of aspen tree? What can you tell about the chesnut tree, and the uses of its wood? Where is the chincapin found? What kinds of beech grow in Pennsylvania, and what are their qualities? What is said of the horn-beam and iron-wood trees? How many species of sour gum have we, and for what is the wood used? What can you tell about the red mulberry? How many kinds of ash are mentioned and what are the qualities of the wood? What kinds of elm, and their distinctive characters?—Of the linden tree? How can we distinguish the pitch pine, the scrub pine, and the yellow pine? What are the properties of their wood? Where does the white pine grow most abundantly? What is said of its height and size? What are the qualities of its wood and for what purposes used? Where does the double spruce grow, and what is said of it? In what place is the hemlock spruce found, and what are the properties of its wood? For what is the bark used? What is said of the tamarack? Describe the red cedar and the quality and uses of its wood? What ornamental shade trees are mentioned as not natives of Pennsylvania?

8. ZOOLOGY.

IN Pennsylvania, from its geographical position, we are presented with many of the northern and southern forms of the American *Fauna* or varieties of animal life, though the predominant character may be said to be northern. The brief limits to which this portion of our work must necessarily be confined, will prevent us from giving more than a mere sketch of the Zoology of the State, and oblige us to omit the mention of such animals as cannot be recognized without a description. The reader who may desire more complete information on this subject is referred to the works of Godman, Harlan, Wilson, Say, and other writers on American Natural History.

We commence with the class MAMMALIA, or those animals which nourish their young with milk. Of those which feed upon insects, besides several species of the Bat, we have of the true *Insectivora*, the Common Mole (*Scalops canadensis*) and the Star-nosed Mole (*Condylura cristata*), both of which raise ridges of earth, by running burrows just beneath the surface. The mole of Europe belongs to the genus *Talpa*. We have also several species of *Sorex*, which are considerably smaller than the moles. *Sorex brevicaudis*, but for its lengthened nose, short tail and inconspicuous ears and eyes, might be mistaken for the domestic mouse. It inhabits the banks of rivulets, forming galleries in the grass like those of field mice, that it may hunt its insect prey in greater security.

The Bear (*Ursus americanus*) and the Wild Cat (*Lynx rufa*) are not uncommon in the mountainous and wilder parts of the State. The Panther, painter or catamount, (*Felis concolor*), though seldom seen near the settled parts of the country, still finds a secure retreat in the dark and gloomy recesses of our most unfrequented forests. The Wolf (*Lupus occidentalis*?) has now become rare in Pennsylvania, though not many years since so common as to be very destructive to sheep in the new settlements. The Otter (*Lutra canadensis*) is also rare. The Red and Gray Fox (*Vulpes fulvus* and *V. virginianus*) with the Raccoon (*Procyon lotor*) are quite common, and are more abundant in the neighbourhood of settlements than in the deep forests of the uninhabited parts of the State. The Pine Marten (*Mustela martes*) is found in the central and northern counties; its fur is fine and the skin is an important article of commerce: it is said that one hundred thousand are annually collected by the Hudson's Bay Fur Company. The Mink (*Mustela vison*) and the Weasel (*Putorius vulgaris*) are common in many parts of the State, and are very destructive to the poultry of the farmers. The Skunk (*Mephitis americana*) and the Opossum (*Didelphis virginiana*) are very common.

Of the order RODENTIA (having a pair of cutting teeth in the front of each jaw) the Beaver, (*Castor fiber*), though very rare, is yet sometimes found in the central counties. The Musk-rat, (*Fiber zibethicus*), the Meadow mouse (*Arvicola pennsylvanica*) and several other species are abundant. The Jumping mouse (*Gerbilus canadensis*) is occasionally seen; and the Ground hog (*Arctomys monax*) is common, making its burrows in the sides of hills, and frequently in clover fields. The Porcupine (*Hystrix dorsata*) occurs in the northern and western parts of the State. Various species of Squirrel are common, particularly the Gray, (*Sciurus cinereus*), the Red, (*S. hudsonius*), the Ground, (*Tamias striatus*), and the Flying Squirrel, (*Pteromys volucella*.) The Hare (*Lepus americanus*) is found in the northern mountainous districts, and the Rabbit (*Lepus sylvatica*) is every where abundant. Of the deer family we have but two species, the Common Deer, (*Cervus virginianus*), and the Elk (*Cervus canadensis*.) The latter animal should not be confounded with the Moose (*Alces americanus*) which is called *elk* by English authors. In fact, many of the American

quadrupeds are of a distinct species, even when they bear the same name with those of the eastern continent.

The BIRDS of Pennsylvania are so numerous in species that we must content ourselves with a mere glance at them. Among the birds of prey the following are not uncommon: Bald Eagle, (*Haliaeetus leucocephalus*,) Fish-hawk, (*Pandion carolinensis*,) Redtailed-hawk, (*Buteo borealis*,) Hen-hawk, (*Butastur lagopus*,) Duck-hawk, (*Falco peregrinus*,) Sparrow-hawk, (*Cerchneis sparverius*,) Great horned-owl, (*Strix virginiana*,) and the two smaller species, Red-owl, (*Scops asio*,) and Mottled-owl (*Scops naevia*.)

The Whipperwill (*Antrostomus vociferus*) is local in its distribution; never appearing in certain districts but a few miles distant from its usual haunts. It is sometimes confounded with a more common bird, the Night-hawk, (*Chordeiles virginianus*,) which wants the bristly feathers about the mouth of the former, and has each wing marked with a conspicuous white spot. The comb upon the claw of the middle toe is also remarkable. The Barn-swallow, (*Hirundo rufa*,) the Chimney-swallow, (*Chaetura pelagica*,) and the Bank-swallow (*Cotyle riparia*) are found wherever there are suitable places for their nests.

The familiar Blue-bird, (*Sialia sialis*,) the waxen winged Cedar-bird (*Bombycilla carolinensis*,) the stately Meadow lark, (*Sturnella ludoviciana*,) with his yellow waistcoat and black cravat; the brilliant Gold-finch or Hanging bird, (*Icterus baltimore*,) which suspends its nest from the branch of a tree, and a host besides, give variety to forest and field by their beauty of colour, playful habits or cheerful song. Among these may be heard the sharp cry of the King-bird, (*Tyrannus intrepidus*,) as he makes a sally from his rude nest to attack the passing King-fisher, (*Ceryle alcyon*,) the welcome note of the Wood pewee, (*Tyrannula virens*,) the querulous voice of the Jay, (*Cyanocorax cristatus*,) as he passes through the foliage to avoid observation. To this varied concert of sounds is added the rapid tapping noise made by the wedge-shaped bill of the Red-headed Woodpecker, (*Melanerpes erythrocephalus*,) or the Flicker, (*Colaptes auratus*,) upon the decayed trunks and limbs of trees, breaking the monotonous sound of the rustling foliage or the murmuring rivulet, and adding to the gratification of the admirer of the works of nature, who is alone able to appreciate the charms which so many varieties of the feathered tribe add to our forest scenery.

Of scansorial birds we have two species of American cuckoo, (raincrow, indian hen,) a considerable number of the *Picus* or woodpecker tribe, as the Log-cock or Wood-cock, (*Dryotomus pileatus*,) which is rarely found east of Harrisburg; and two varieties of Sapsucker (*Picus villosus* and *P. pubescens*).

The families of the Thrushes, Finches, and Flycatchers present us with most of their species: the Wild Turkey is still to be found in Pennsylvania; while the Partridge (*Ortyx virginiana*) and the Pheasant (*Bonasia umbellus*) are quite common in various districts. In New England the partridge of Pennsylvania is called *quail*, and our pheasant is called *partridge*.

Most of the water birds inhabiting the United States and British possessions in North America are found within the limits of this State. Those peculiar to the bays, and even some sea birds, pass for a considerable distance up the Delaware and Susquehanna rivers. Pennsylvania is favourably situated for the reception of many migratory species, as the Wild-goose, (*Anser canadensis*), both on their passage northward and southward, including many which do not breed within its limits.

REPTILES. We have but one species of Land-tortoise (*Cistuda carolina*). Of those which inhabit the water, the Snapper, (*Chelydra serpentina*) is the most remarkable, and is highly prized as an article of food. Several species of Terrapins are found in our waters; *Emys geographica*, a large one, occurs both in the eastern and western parts of the State; *Emys punctata*, marked with small yellow spots; and *Emys picta* having the margin of the shell marked with red. These two small species are frequently found in company, in ponds and streams, reposing upon projecting logs and stones.

It appears that we have but one species of Rattlesnake (*Crotalus durissus*) in Pennsylvania; the varieties of colour, &c., belonging to the difference of sex and age. This is the only poisonous snake except the Copper-head (*Trionocephalus contortrix*) of which we have any evidence; the genus *Heterodon*, commonly called blowing or hissing Viper, being harmless. Of the genus *Coleber* there are several species, among which may be mentioned the Garter-snake (*Coleber sirtalis*), the Ribbon snake, (*C. saurita*), much like the former, House snake, (*C. eximius*), Green snake, (*C. vernalis*), and Water snake (*C. sipedon*.)

Among the Lizards proper, the *Scincus fasciatus* is a beautiful animal with a blue tail and marked with five yellow stripes: the *Tropidolepis undulatus* is remarkable for the roughness of its scales. It is brown, with irregular cross bands of black. Both these species are about eight inches long, extremely active, and climb with great facility.

The largest of our frogs is the Bull-frog, (*Rana pipiens*), which is frequently eaten, and is said to be a great delicacy to the epicure. Besides this one, the most common species are the Shad frog, (*Rana halecina*), green, with dark spots margined with yellow: *Rana palustris*, brown, with rows of square dark brown spots: *Rana sylvatica*, pale reddish brown; and *Hyla versicolor*, tree frog. The common Toad is properly named *Bufo americanus*, being different from the "common toad" of Europe.

Of the land Salamanders we will mention *Salamandra symmetrica*, reddish brown, with a row of scarlet spots upon each side; *S. erythronotus*, of a small size, found in the woods under stones and logs; and *S. longicauda*, yellow, spotted with black, tail as long as the body. Somewhat like the first, but of a greenish colour, and inhabiting the water, is the *S. dorsalis*. But the most remarkable animals of this family are the Water puppy, young alligator, (*Necturus lateralis*), of the Ohio, Lake Erie, &c. two feet in length; and the Hellbender (*Menopoma alleganiensis*) not quite

so large, with the mouth more rounded in front and without gills. It inhabits the west branch of the Susquehanna, and is said to occur in the Ohio.

The FISHES of Pennsylvania are numerous, including some sea fishes which enter the eastern waters, as the Shad (*Alosa sapidissima*,) Herring, (*Clupea vernalis*,) Bill-fish, (*Belone truncata*,) Rock-fish, (*Labrax lineatus*,) and others. Touching Lake Erie on the north-west, we possess twenty or thirty species peculiar to the great lakes, of which, as among the most interesting, we will mention the White-fish, (*Coregonus albus*,) of which large quantities are caught and salted for sale. There are two or three other species belonging to the same genus. The great lake Trout (*Salmo amethystus*) sometimes attains a very large size. The different species of Perch and Bass (*Cichla*) are much prized; but the fish here called bass is different from the sheep's head bass, which is *Sciæna ocellata*. Several species of Cat-fish (*Pimelodus*) and Sucker (*Catostomus*) are not uncommon in the lake.

Species of the two last mentioned genera are found in the western part of the State, in the Ohio and its tributaries. The large perch, called white salmon, is caught at Pittsburg in the spring. Rock-perch (*Perca chrysops*) is rare. The Bubbler (*Ambloplites rupestris*) is a large and singular fish, which feeds upon the soft parts of the *Unio* or mussel, the hard shells of which it is able to crush with its teeth situated in the throat. Several species of false herring (*Hyodon*) occur here. On both sides of the Alleghenies, the clear mountain streams contain various species of trout. The genus *Catostomus* has many species in the east and west, known by the common names of Buffalo-fish, Mullet, Carp, &c.

Of the fishes in the Delaware and Susquehanna we will only mention the yellow Perch (*Perca flavescens*,) the Gar, or bony Pike, (*Lepidosteus osseus*,) the Lamper-eel, (*Petromyzon americanus*,) and several species of Sturgeon, Catfish, Eel and Sunfish. The last genus (*Pomotis*) is remarkable for guarding the place where its spawn is deposited, and the Cat-fishes for accompanying and taking care of their young.

INSECTS. Pennsylvania is the northern limit of *Scarabæus tityus*, the largest beetle found here, which is about two inches in length, of a yellowish-gray colour, spotted with black. We have met with but one native specimen. The next in size is *Prionus latipennis*, of a black colour, with short strong jaws, a pair of large bearded antennæ (horns) and three spines upon each side of the thorax.

Of the order *Coleoptera*, (beetles,) Melsheimer, a German clergyman, residing at Hanover in York county, published a catalogue at that place in the year 1806, wherein he records one thousand three hundred and sixty-three species, and many others have since been added to the list. During the warm days of summer, various species of *Cicindela* will attract attention by the rapidity of their movements; flying up from the dusty road or arid sand as the pedestrian approaches, to alight again a short distance in advance of him. They are from a half to three-fourths of an inch in length,

with brown or brilliant green colours; and as they feed upon other insects, their long legs, strong jaws, and great activity, enable them to take their prey without difficulty. *Passalus cornutus* is a large flat black boring beetle, common in rotten wood. We have more than a hundred species of the genus *Elatér*, beetles which use their head and thorax as a mallet. *E. oculatus* is the largest: it is black, sprinkled with white, and has a pair of large eye-like velvet black spots, margined with white. The tumble bug (*Ateuchus lœvis*) may be frequently seen in pairs, industriously employed in rolling a ball containing their eggs.

Among beetles with brilliant colours, the large Goldsmith (*Gymnetis nitida*) and the *Calosoma scrutator* are conspicuous. The latter is very active, about an inch and a quarter in length, the elytra (wing covers) green, thorax and legs purple, the whole margined with reddish orange, having a metallic lustre. Should the young entomologist catch one in his fingers, and feel curious to know whether it has the power of making an impression upon his sense of smelling, the result would probably be the release of the captive. The Horn-bug (*Lucanus capreolus*) is generally known, and is one of the few insects which have received common names. It is dark reddish brown, nearly an inch and a half long; the jaws of the male project and curve inwards, bearing some resemblance to the horns of an ox. *Scarites subterraneus* is entirely black, less than an inch in length, and divided into two equal parts by a deep intersection. Its jaws are strong and projecting, and the thorax is wider than the wing covers. It burrows in the ground, and may be found beneath logs and stones.

The order *Orthoptera* includes cockroaches, crickets and grasshoppers, of which we have many species. The male of the Katydid (*Platyphylum concavum*) enlivens the autumnal nights with a peculiar sound produced by its wing covers.

Of the *Homoptera*, the Locust (*Cicada septendecem*) is remarkable for spending seventeen years in the grub state; but it does not assume its perfect state in all parts of the country in the same year. As in the cricket family, the male locust alone is musical, its sounds being produced by a peculiar apparatus. In English books our locusts are called *harvest flies*, and our grasshoppers, *locusts*; an example of the confusion which would result from the use of common names alone. The locust, therefore, of the English Bible, was probably a large destructive species of grasshopper.

Of the *Hemiptera*, or bug tribe, we will only mention one species, that it may be destroyed wherever it appears. This is the *Eriosoma mali*, or apple tree blight. It is wingless, and may be detected by the white cottony down with which it is enveloped. It is very injurious to young apple trees, and may be destroyed by pressure or by washing the tree with hot soapsuds.

It is not improbable that a thousand species of *Lepidoptera*, the butterfly family, inhabit this State. One of the most beautiful of those which fly during the day is the *Papilio turnus*, which is yellow, striped with black, and of a large size. *Hyalophora cecropia*, a very large nocturnal species, measures six inches in the extent

of the wings, which are reddish brown, each marked with a whitish kidney-shaped spot, margined with reddish and black. Its cocoons have been carded and used as silk; but they cannot be unwound. *Catocala nupta* (*C. sponsa* of some authors) is three inches and a half in the extent of its wings, dull brown, the lower pair of wings scarlet with two broad bands of black. It is remarkable as being one of the few species found on both sides of the Atlantic.

To those who have never attended minutely to this subject it may appear preposterous to suppose that we have nine thousand species of insects; but upwards of twelve thousand are actually known to exist in Great Britain and Ireland, which, from their insular and northern position, seem to be less favourably situated than Pennsylvania, for the acquisition of a large number of species. One hundred and fifty species of *Arachnida* is a low estimate, when we consider that about two hundred and fifty species of *Araneida* alone, or spiders proper, are already known to inhabit the United States. Besides these we must take into account such genera as *Phalangium*, (long legs;) *Chelifer*, which may be recognized by its claws, resembling those of a scorpion or lobster; and several genera found parasitic upon other insects; *Ixodes*, (tick,) and the *Acarida* or mite family generally, including the nearly allied *Hydrachnida*, which inhabit the water and resemble minute spiders.

Of our CRUSTACEA, one of the largest is *Potamobius affinis*, which inhabits the eastern waters, and is three inches in length, resembling a small lobster. It jerks itself backwards through the water with great rapidity by means of its tail. The number is made up by much smaller, and indeed microscopic species, which inhabit puddles and stagnant waters in the greatest profusion. Some of these, constituting the genera *Cypris*, *Limnadia*, and *Daphnia*, are enclosed in a little bivalve shell like a mussel; for the young of which these shells might be mistaken. This is particularly the case with a species named by S. S. Haldeman, *Limnadia coriacea*. It is a third of an inch long, inhabiting Pennsylvania and Indiana, and is a giant among the little Cyprides in whose company it is generally found.

ANNELIDES. These are worms with the body more or less plainly divided into rings, as in the various species of leech and earth-worm. The genus *Tubifex* constructs for itself a little tube, out of which it projects two-thirds of its body, waving it about in every direction in search of its food, but withdrawing itself instantly when disturbed. It resembles a thin translucent thread, attached to the mud by one end. A species has been detected by S. S. Haldeman on the margin of the Monongahela river at Pittsburgh, where it exists in great abundance, and which he has named *Tubifex simplex*.

THE MOLLUSCA of Pennsylvania, although numerous, are confined to land and fresh-water shells, and number not less than eighteen genera. Of the land kinds, the largest species is a snail called *Helix albolabris*, about an inch and a quarter in diameter.

Between this and the smallest, of which the full grown shell does not exceed the size of a pin's head, there are many intermediate species. At least two species of naked snail are found among us, which might be mistaken, without examination, for the common kinds deprived of their shells, were this possible. The fresh water varieties are found in all parts, and some of the bivalves possess great beauty. Of the bivalves, about fifteen species inhabit the Delaware and Susquehanna, and as many more the branches of the Ohio in the west.

STERELMINTHA. These worms differ from the Annelides in being of a soft homogeneous texture, and having a more simple organization. The genus *Planaria* bears some resemblance to a small leech, and may be observed in springs, gliding along with a uniform motion. The body has but one opening, which is in the middle of the under surface: through this the food is taken, and when digested, a quantity of water is drawn in, and the whole rejected together. If cut into several pieces, each portion will reproduce its lost parts, the tail getting a new head, and the head, a tail, as we have observed in *Planaria gracilis*. To this division belong the **ENTROZOA**, or those worms which are found in the internal parts of man, and animals generally. They are not always confined to the intestines, but are sometimes lodged in the muscles, lungs, kidneys, and even in the brain.

PROTOZOA. We do not particularize any of the species of animalcules, (*Infusoria*,) because they are not popularly known, and a good microscope is required to examine them. The number described in Ehrenberg's great work is seven hundred and twenty-three species, observed in Europe, Asia, and Africa. A considerable number of our native species have been observed; but where so many are minute, a great proportion of them must for years elude the most persevering search. A foreign species, known on the eastern continent, the *Monas termo*, is a living globule one twenty-four thousandth part of an inch in diameter,—and a drop of water may afford room for five hundred millions of them, or as many as there are human inhabitants upon the earth.

ZOOPHYTES. The genus *Hydra* may be detected in fresh quiet waters. It is in the form of a small tube, closed at one end; and from the margin of the open extremity about six arms, like filaments, are spread to take their living food, the remains of which are afterwards ejected. They may be readily seen with the naked eye, and, like *Planaria*, they have the power to reproduce their parts when cut off. Their method of reproduction is curious. A bud appears upon the side of an adult individual, growing out like the branch of a tree; its cavity being continuous with, and supplied with nourishment from the parent stem; the arms at length appear and take their own food,—the base closes, and several animals are united together as one; finally, when nearly full grown, the young ones become detached and commence a separate existence.

In making the following estimate of the number of species composing the Fauna Pennsylvanica, we have had to rely upon our

own judgment, the existing materials being very scanty. Indeed the zoology and botany of the Commonwealth must remain in a state of comparative obscurity, until they shall be thought worthy of being investigated under the authority of legislative enactment. The legislatures of Massachusetts and New York made appropriations towards the natural history of those States when they organized their geological surveys, and had the same been done in Pennsylvania, under the direction of a competent and skilful naturalist, much of the obscurity which now exists in relation to our animals and plants would have been removed. Future investigation will perhaps prove some of our estimated numbers to be near the truth, although they are given only as an approximation, and in round numbers.

Species of Mammalia	50	} 500 Vertebrata.
“ Birds	240	
“ Reptiles	60	
“ Fishes at least	150	
“ Insects	9000	} 9500 Invertebrata.
“ Arachnida	150	
“ Crustacea	50	
“ Worms at least	50	
“ Mollusca	100	
“ Animalcules	150	
<hr/>		
10,000		Species.

What animals of the class *mammalia* are mentioned as feeding upon insects? Which are chiefly found in the unsettled parts of the state? What is said of the fox and the raccoon? What animals are next mentioned? What is said of the beaver and others of the order *rodentia*? Which kinds of squirrel are most common? What is next mentioned? What is said of the deer, elk and moose? What birds of prey are noticed? What is said of the whipperwill and night-hawk? How many kinds of swallows? What other birds are mentioned as common? What scansorial birds have we? What can you tell of the turkey, partridge and pheasant? What water birds are found in this State? What species of tortoise and terrapin have we? Which of our snakes are poisonous? What other kinds are mentioned? What lizards? How many kinds of frogs? What is said of the salamander tribe? What sea fishes enter our eastern rivers? Mention the fishes belonging to the lakes. Which are found in the waters of the Ohio? What streams do the trout prefer? What kinds of fishes are noticed in the Delaware and Susquehanna? Which kind of insects is first mentioned? Describe some of them. What insects belong to the order *orthoptera*? What is said about locusts? What insects are next mentioned as being injurious to apple trees? How many species of the butterfly family is it supposed we have? What is said concerning the numbers of species of insects? Tell what is mentioned about the crustacean animals. What are annelides? What is said of the mollusca?—Of the sterelmintha? What curious property belongs to the genus *planaria*? What is said of the infusoria, or microscopic animalcules, and of the size of some of them? Describe the genus *hydra*, of the zoophytes, and the manner in which it is reproduced. What is the number of species of each class of animals, supposed to exist in the State?

9. POPULATION.

The people of Pennsylvania, deriving their origin from different sources and continually receiving fresh accessions from immigration, present a mass of population having various distinctive shades of character; but a community of interest, daily intercourse, and the influence of education are constantly wearing away their difference of habits, language and other peculiarities, and assimilating them more and more to one another.

A few descendants of the Swedes and Dutch who dwelt on the shores of the Delaware before the arrival of the mild and benevolent Penn, are still found near the same spot; and the ancient Swedish church of Wicacoa still stands as a place of worship near the navy yard in the lower part of Philadelphia.

The English followers of Penn settled in the south-eastern counties, where we still recognise their descendants in the Pembertons, Morrisises, Hollingsworths, Walns and Richardsons of Philadelphia; the Puseys, Newlins, Darlingtones, Pyles and Mendenhalls of Chester; and the Watsons, Kirkbrides, Yardleys, Swifts and Paxsons of Bucks.

The emigrants from Wales, a small but active and industrious band, located themselves near the Schuylkill in Montgomery and Chester, where many an Evans, Griffith, Jones, Morgan, Jenkins, Owen and Lloyd yet tills the fields trod by his ancestral fathers. There are also many Welsh, of more recent arrival, in Cambria and Schuylkill counties.

The palatine Germans, who came over in great numbers about the year 1727, spread over Lancaster, Berks and Northampton, wisely choosing some of the best land in the State, where they soon made themselves comfortable, and next grew quietly rich. The early records of the names of these worthy and industrious strangers, as naturalized by the provincial council, show among them the ancestors of many of our well known German families of the present day. We there find Schneider, Shultz, Wolf, Meyer, Ulrich, Fegeley, Reinhardt, Keller, Landis, Shaeffer, and many others whose descendants, flourishing by industry and economy, have become numerous, and some of whom have filled the highest offices in our State. The German population of Pennsylvania, naturally increasing, and augmented by continual accessions from the "Fatherland," has since spread over a large portion of the State, still inheriting the economy and prudent foresight of their ancestors, and generally establishing themselves on the most fertile soils.

Ireland has also contributed largely towards the peopling of Pennsylvania; but not keeping so much together as the Germans, the Irish have become more blended with the general mass. Many of the early settlers from that country established themselves in the southern part of Lancaster county, also in York and Cumberland. As their numbers increased by continual arrivals from the mother country, they spread westward across the mountains. Here they cleared and settled some of the fairest portions of our

western counties, several of which are mostly peopled by immigrants from Ireland and Scotland, or their descendants. They are a frugal and industrious people, public-spirited and patriotic; and under their care western Pennsylvania has become prosperous and distinguished for its productions in agriculture and manufactures.

Most of the northern counties have derived a considerable share of their population from New England, particularly Luzerne, Susquehanna and Bradford. Some of the first settlements here were made by people from Connecticut, under the authority of that province, which then claimed a large part of Pennsylvania as being within her limits, which were in those days asserted to extend from the Atlantic to the Pacific Ocean. And though Connecticut has long since moderated her claims, and contracted the boundaries of her actual jurisdiction to reasonable limits, yet her enterprising and restless sons, with their neighbours of Massachusetts and the other New England states, still push their settlements from the Atlantic towards the Pacific. Many a neat dwelling has been reared in the wilderness by this thrifty and careful people; many a smiling village has been built, and many a mill and manufactory set in operation, which but for them would never have existed. The school-house and the place of worship are always found among *them*; their early lessons of piety and morality are still remembered in their new homes, and among the deep forests or in the lonely valley, the voice of prayer and the song of praise ascend to Heaven from the dwelling of many an emigrant from New England.

We have also in Pennsylvania many French, and some Spanish and Italian families: these not being generally addicted to agricultural pursuits are found chiefly in the cities and larger towns. Some of the Huguenots or French Protestants who had fled from religious persecution in France, seeking a land where they might enjoy unmolested the right of worship according to their own faith, came to Pennsylvania soon after its first settlement. Many other French people have arrived from time to time, both from France and the West Indies. On the revolt of the blacks in St. Domingo or Hayti, in 1792, great numbers of the French inhabitants of that island, to escape death, fled to the United States, of whom many settled in Philadelphia.

The following statement of the population of Pennsylvania, at different periods since the first departure of William Penn for England in 1684, will show its progressive increase since that time.

<i>Year.</i>	<i>Population.</i>	<i>Increase.</i>
1684	7,000	
1701	20,000	13,000 in 17 years.
1763	280,000	260,000 in 62 years.
1790	434,373	154,373 in 27 years.
1800	602,545	168,172 in 10 years.
1810	810,091	207,546 " "
1820	1,049,313	239,222 " "
1830	1,347,672	298,359 " "
1840	1,724,033	376,361 " "

An abstract from the census returns of Pennsylvania for 1840 gives the following results concerning the different classes of the population of this State.

White persons,	Males,	844,770	
	Females,	831,345	
		<hr/>	1,676,115
Free coloured persons,	Males,	22,752	
	Females,	25,102	
		<hr/>	47,854
Deaf and dumb persons			832
Blind			636
Insane and idiots			2,143
Revolutionary and military pensioners			1,251
Persons employed in mining			4,603
“ “ in agriculture			207,473
“ “ in commerce			15,338
“ “ in manufactures and trades			105,883
“ “ in navigating the ocean			1,815
“ “ in navigating canals, lakes and rivers			3,951
“ “ in learned professions			6,706
Students in universities and colleges			2,034
“ in academies			15,970
Scholars in common schools			179,989
White persons over 20 years of age unable to read and write			33,940

What is said of the difference of origin and of character in our population? Where are the descendants of the first Swedish and Dutch settlers still to be found? In what part of the State did the English followers of Penn settle? The Welsh people? The Germans? What is said of the German population of Pennsylvania? Where did the early settlers from Ireland chiefly establish themselves? What is said of their descendants in the western counties? In what part of the State have we many New England people? From what other countries has a portion of our population been derived? What was the total population of the State in 1840? How much had it increased in the last ten years? (*Other questions may be asked respecting the number of the different classes of population.*)

10. RELIGION AND MORALS.

The religious and moral character of Pennsylvania seems to have received an impression from the principles of order, justice, benevolence and toleration which were professed and practised by the wise and liberal Penn, and his sober and orderly companions. One of the first laws enacted in the colony provided that “none acknowledging one God, and living peaceably in society, should be molested for his opinions or his practice; nor be compelled to frequent or maintain any ministry whatever.” Here breathes that spirit of tolerance and religious freedom, which has always distinguished Pennsylvania, and which it is hoped may never be in-

fringed. All men are here free to worship God according to the faith of their fathers, or the dictates of their own conscience; and no preference is given by our constitution and laws, or by public opinion, to any religious sect or denomination. The liberal sentiments and wise regulations of Penn concerning civil and religious liberty were soon duly appreciated, and the infant colony became an asylum for the oppressed,—a neutral ground upon which all denominations might dwell together in peace. This gave rise to the early establishment and the rapid increase of multiplied congregations belonging to various religious societies.

The immediate companions and followers of Penn were mostly of the society of Friends, commonly called Quakers, who have since spread into several parts of the State, but are most numerous in Philadelphia and the south-eastern counties. Many of the early English settlers were Episcopalians, who now have respectable congregations in most of the counties. The Swedes, who were in the province before the arrival of Penn, were Lutherans, and these were soon greatly augmented by the arrival of Germans of that persuasion. The Presbyterians soon became numerous by arrivals from the north of Ireland and from Scotland; and were increased by the addition of the German and Dutch Calvinists. They are now said to be the most numerous denomination in the State. The Baptists had a small church in Bucks county as early as 1684, and have since greatly increased in Pennsylvania. The first Roman Catholic chapel was erected in Philadelphia about the year 1733, and the number of those professing this faith has been continually augmenting by immigrants from Ireland, Germany, France and other countries.

The Moravians, or United Brethren, established themselves in 1741 at Bethlehem, Nazareth, Litiz and other places, where their descendants still remain, and are distinguished for their industry, morality, and orderly conduct. The Methodists are numerous in Pennsylvania, and have congregations in almost every part of the State. Beside the sects already mentioned, the increase of population from the influx of immigrants from various countries has introduced many others, and Universalists, Unitarians, Mennonists, Swedenborgians, Jews and several other religious denominations are found among us.

But notwithstanding this diversity of religious belief in our community, it is pleasing to observe the almost universal harmony which exists between the different sects in relation to their public and private intercourse with each other. The spirit of Christian charity and benevolence seems to have general influence; and the establishment of many of our public charitable institutions has been effected, and their usefulness still continued, by the united zeal of benevolent and public-spirited individuals and clergymen of most of our various religious denominations. All seem to be united in the cause of religion, morality and education; and though unprofitable public discussions or disputes upon religious subjects have sometimes occurred, yet the general harmony seems to have been but little disturbed by them; and the bitterness of sectarian

feelings has yielded to the mild influence of Christian charity and the spirit of universal toleration.

Within the last few years the moral character of Pennsylvania, in common with that of other States, has undergone a most happy change, from the progress of that mighty reform which seems to be spreading its influence over the civilized world. The use of spirituous liquors had long been discouraged in this State by the Society of Friends; but their care on this subject was exercised chiefly among their own members. The recent impulse given to the cause of *Temperance* by the united and powerful efforts of the wise and good of all religious persuasions, has been productive of the most happy and cheering effects. The attention of the people has been aroused, they have been taught to *think* upon the subject; hundreds of the debased and miserable victims of intemperance have been reclaimed from their degraded position and restored to society as useful and respectable men. Many of those who sold them the intoxicating and destroying draught have relinquished the trade, because they became convinced of the injury they were inflicting upon the wretched creatures who demanded it at their hands, and who to obtain it freely offered their last coin which might have procured food for a heart-broken wife and starving children. The scenes of drunken riot and disgusting debauchery which a few years ago were but too common, have now become comparatively rare. The moral sense of the community is awakened,—they are beginning to reflect upon and understand the subject in its proper light,—and though a few poor deluded victims may still be found so weak as to offer themselves as a willing sacrifice to the destroying demon of the bottle, their number is rapidly diminishing before the wide-spread influence of that moral reform which has awakened all classes of society to a knowledge that their best interests and their true happiness are dependent upon strict habits of temperance and sobriety.

Mention a provision of one of the first laws of Pennsylvania concerning religion. What is said of freedom of conscience and religious liberty being the privilege of all our citizens? Of what religious society were the companions and followers of Penn? What is said of the Episcopalians?—Of the Presbyterians?—Of the Baptists?—Of the Roman Catholics?—Of the Moravians?—Of the Methodists? What other denominations are mentioned? What is said of the feeling of the different persuasions towards one another? What has recently had great effect in reforming the moral character of our population? What good effects have resulted from the progress of temperance?

11. EDUCATION.

The subject of education appears to have received early attention in Pennsylvania, and has since been recommended and encouraged on the part of the delegated authorities of the State by continual and successive constitutional provisions and legislative

enactments. If the benefits of learning have not been so generally diffused among the inhabitants of this State as among those of New England, the defect should not be altogether ascribed to a want of due consideration of the value of education; but probably in some measure to the heterogeneous character of our population, composed of emigrants from various foreign countries, entertaining their own peculiar views and prejudices, and who, even yet, are not perfectly amalgamated into one great body politic, entertaining the same manners, customs and language.

As early as 1683, before the first settlers of Philadelphia had protected themselves from the weather by the erection of comfortable dwellings, we find by the ancient records that "the Governor and Provincial Council, having taken into their serious consideration the great necessity there is of a school master for the instruction and sober education of youth in the town of Philadelphia, sent for Enoch Flower, an inhabitant of said town, who for twenty years past hath been exercised in that care and employment in England, to whom having communicated their minds, he embraced it upon these following terms: to learn to read English, four shillings by the quarter; to learn to read and write, six shillings by the quarter; to learn to read, write and cast accounts, eight shillings by the quarter; for boarding a scholar, that is to say, diet, washing, lodging and schooling, ten pounds for one whole year."

In 1689, the Friends' public school was established, and received a few years afterwards, from the benevolent founder of Pennsylvania, a charter by the motto of which he shows his appreciation of the blessings of education. "Good instruction is better than riches," was the simple truth by which he expressed his enlightened views in relation to this important subject. This institution is still continued, and under the direction of the Society of Friends dispenses instruction to numerous pupils. As the population of the province increased, the necessity for education was generally recognised, and public and private schools were established. The "Academy and Charitable School in the province of Pennsylvania" was founded in 1750, chiefly by the exertions of Dr. Franklin, and chartered in 1753. In 1755 a new charter was granted by which it was erected into a college with the power to appoint professors and confer degrees in the various arts and sciences, and in 1779 it was created a university. A classical school of some celebrity was established in Bucks county as early as 1728, by the Rev. William Tennent, and one at New London, in Chester county, in 1741, by the Rev. Francis Allison, who afterwards became the provost of the college in Philadelphia.

The important subject of general education was not overlooked by the wise and provident foresight of the early fathers of our republic; for the first constitution of the State, framed in 1776 by a convention of which Dr. Franklin was president, provided for the establishment by the legislature of one or more schools in each county, and of one or more universities for the youth of the State generally. The constitution of 1790, assuming still broader ground

in favour of general education, declares that "the legislature shall, as soon as conveniently may be, provide by law for the establishment of schools throughout the State in such manner that the poor may be taught *gratis*," and further, that "the arts and sciences shall be promoted in one or more seminaries of learning." This provision has been found so fully sufficient as a basis for legislation that it is continued without change in the revised constitution of 1838. It established public instruction as part of the business duties of the authorities of the Commonwealth, leaving to public opinion to guide generally the mode in which that business shall be carried on, but absolutely guarantying instruction at the public expense to those who are unable to procure it for themselves.

Under this provision was passed the act of 1809, to provide for the education of the poor gratis; and at different times various plans have been tried which have at length resulted in the system at present in operation. Any system upon which the children of the poor are to be separated in their education from others, is opposed to the principles of our republican institutions, and has never found favour for any considerable length of time with the people at large. Plans of this sort have accordingly been laid aside very soon after they have been tried. Our republic depends for its very existence upon the virtue and intelligence of the people, and the free and full education of all its youth is the only mode by which that intelligence can be secured.

In 1831, the legislature passed a law for the establishment of a general system of education, and providing for the creation of a fund in aid of, or for the support of schools. In 1834 an act was passed which forms the basis of the present law, and in 1836 the law now in force, entitled "an act to consolidate and amend the several acts relative to a general system of education by common schools," which contemplates nothing less than the elementary instruction of all the youth of the commonwealth.

By the present law each township, borough or ward in the commonwealth, not within the city and incorporated districts of the county of Philadelphia, constitutes a school district, except that any borough which is or may be connected with a township in the assessment of its county rates and levies, forms a district with such township. In each district is a board of school directors, two of whom are chosen annually by the people, holding the office for a term of three years. In those districts where the provisions of the law have been accepted, the directors fix the amount of tax to be levied for school purposes, and superintend the pecuniary as well as the educational concerns of the schools. They are required to establish a sufficient number of schools for the instruction of all persons over four years of age for whom application may be made, and to keep these schools open for at least six months in the year, if they have the requisite funds for that purpose. The tax to be levied is in no case to be less than the appropriation from the State treasury received by the district, nor greater than three times that amount. The sum annually appropriated by the legislature for distribution among the districts was

at first \$200,000; which in 1838 was increased to one dollar for every taxable inhabitant; and the amount actually paid to the accepting districts in 1842, was upwards of \$238,000. Besides the annual appropriation in aid of common schools, the legislature has at different times made additional grants for the same excellent object, and in 1837, on the occasion of receiving into the treasury a proportion of the surplus revenue of the United States, distributed the sum of \$500,000 for the erection, repairs and purchase of school houses, and for the purpose of schools generally.

In the districts which have not joined the school union by accepting the law, directors are nevertheless elected, who are required to execute the provisions of previous laws in regard to the education of the poor; and the question of opening public schools is annually brought before the people of the district at the time of the election of school directors.

The public schools of the city and county of Philadelphia were not embraced in the organization and government of school districts established by the act of 1836, having been, by an act passed in 1818, erected into a district for the purpose of common school education, and denominated the first school district of the State of Pennsylvania. Under this act, and its several supplements, a system of common school instruction has been pursued in this district since the period of its passage. Its progress for some years was slow; but it has gradually secured public confidence and support, and the public schools of Philadelphia are now regarded as being equal, if not superior in practical utility, to those of any city in the Union. The pupils are first received into primary schools where they are taught the elements of intellectual improvement; they are next removed into the grammar schools where they are instructed in all the essential branches of a plain English education; and finally those whose diligence in study and capacity for learning may have enabled them to pass the requisite examination are transferred to the High school, where a more extended course of instruction is open to them, including the Latin, French and Spanish languages; belles-lettres; moral, mental and political science; mathematics and practical astronomy; natural philosophy; natural history; chemistry, drawing and writing, &c.

The organization of the school district composed of the city and county of Philadelphia is well adapted to a dense population, combining the advantages of a minute superintendence of the schools with those of a general system and central authority. The district is composed of school sections, in each of which directors are chosen by the people or appointed by the corporate authorities. Each board of directors sends one or more delegates to a central body called the Controllers of the Public Schools. The directors superintend the schools in their several sections, and disburse the moneys appropriated to them by the board of controllers. The amount of money required for the expenses of the schools is determined by the controllers, who make a requisition for it upon the commissioners of the county. The general regulations for the schools of the district are made by the board of controllers, who,

holding the purse, have an effectual check upon the action of the sectional boards. Every year the president of the board of controllers makes a report upon the general condition and progress, and the prospect of the schools in the district, which being published give to the citizens the general results of a system in which they are all so deeply interested. It is perhaps not too much to say that up to the present time these reports have been characterized by that plainness and directness which marks an account of a sound and well-ordered system. Similar advantages to those derived from a union of several school sections in Philadelphia, are found to result from a similar organization in the city of Lancaster, and must follow from it wherever adopted. What is good in reference to education for one part of a community must be equally so for another, under circumstances so nearly the same as the different parts of a town or borough.

The public school system has been steadily gaining ground since its first introduction into Pennsylvania. In 1836 there were 987 school districts in the State, of which 745, or about three-fourths, had accepted the terms of the school-law. Though the question of withdrawing from the school union is submitted every three years to the people of the accepting districts, four-fifths of the districts in the State, or 905 out of 1,113, had accepted the terms of the law in 1842. The hope is confidently indulged by the friends of public education, that in a few years the whole State will be unanimous in its feeling towards the system and in its universal adoption.

With the progress of the system the importance of education has been more generally felt and more extensively acknowledged. In 1836 there were 3,384 public schools in the State, exclusive of the city and county of Philadelphia, attended by 139,604 scholars; and in 1842, 6,116 schools attended by 281,085 scholars; the number of public schools having nearly doubled and the number of scholars more than doubled in six years. The sums raised by taxes in the accepting districts give evidence of the same fact: in 1836 the whole amount was \$231,552, and in 1842, \$398,766, and this increase took place notwithstanding the pecuniary difficulties and general depression which prevailed. The whole sum expended for common schools in the accepting districts of the State, exclusive of the city and county of Philadelphia, in 1842, was \$648,831; in the city and county \$237,764, and in the whole State where the system is introduced \$886,595.

The sums expended for the erection of school houses in the accepting districts from 1836 to 1842, both inclusive, amount to more than a million of dollars. More care has been taken in the location and construction of the buildings, more attention paid to the convenience of their internal arrangement and to the neatness of external appearance; and though in many cases improvement is still to be desired in these particulars, there are districts in which the school houses are models for imitation. The necessity for so large an expenditure to provide places for instruction has doubtless been a great impediment to the progress of the system; but being

once overcome in a district, no similar difficulty can recur for a long series of years.

The attention of the directors of the public schools to their duties, and the interest which they have manifested in the progress of the schools, have also gone on increasing. In 1836, reports were received by the superintendent of common schools from less than two-thirds of the districts, and in 1842 from more than eleven-twelfths. The whole number of schools in the reporting districts, not including the city and county of Philadelphia, is 6,116, and the average time during which they are kept open for instruction is five months and nine days. The number of male teachers is 5,176, at an average salary of \$18.58 per month; and of female teachers 2,316, at \$11.16 per month. The number of male scholars is 154,454, and of females 126,631. The number learning the German language is 5,141. The average number of scholars in each school is 44; and the cost of tuition for each scholar is 42½ cents per month, or \$1.27½ per quarter. The amount of State appropriation paid last year to accepting districts was \$238,162, and the reported amount of tax levied in them was \$398,766. The amount paid for instruction in the reporting districts for that year was \$425,501; for fuel and contingencies \$41,044; and for school houses \$113,339.

The large aggregate expense of the schools has sometimes led to a question in reference to their economy. In considering this question we should take into view all the benefits conferred by the public school system; for economy consists in the judicious use of means so as to derive the greatest amount of return from the smallest expenditure. The great increase in the number of common schools since the adoption of the system, the improvement in their character, the more general diffusion of the benefits of education among the people, and the consequent elevation of the standard of moral and intellectual refinement and intelligence, should all be taken into the account. And if we treat the question merely as one of dollars and cents, we shall find that the average cost of instruction under the old system very considerably exceeded \$1.27½ per quarter for each scholar, which is the average expense under the present common school system. The people are quick to discover the effect of measures bearing directly upon their interest, and had they perceived no advantages resulting from the adoption of the common school system, it would never have been embraced by four-fifths of the districts in the commonwealth. If the old system was sufficient for the demands of education, why has a million of dollars been expended within the last six years in the erection of school houses by directors acquainted with the wants of the people and the necessity for more extended opportunities and facilities for instruction? It is not because we have abandoned a better for a worse system that the number of schools and of scholars in the accepting districts has so greatly increased, and that the advantages of education have been so much more widely extended; but because we have been guided by the universal truth, that the standard of common education is always highest, and its benefits most

extensively felt, in those communities where it is sustained by common and united means.

In reviewing the progress of the common school system in Pennsylvania, the friends of education find abundant cause for satisfaction and congratulation. It was not to be expected, in a community differing in language, habits, and customs to which they had been long attached, that a total change could be immediately effected in the system of instruction, and that they could be at once brought to regard as a public duty the provision for education which they had so long been accustomed to consider as merely a matter of private consideration. Early and deeply seated prejudices were to be removed; local customs and habits of long standing were to be changed; the opposition of the wealthy and parsimonious was to be encountered; and a thousand other obstacles to be met, before a system could be brought into general favour which should dispense its blessings equally to the rich and to the poor, and make education, like the air we breathe, as free to the cottage as to the palace.

The difficulty of obtaining properly qualified teachers for the common schools in many parts of the State is now the principal drawback upon the effectual operation of our school system. The profession of a school-master, notwithstanding his usefulness in society and the benefits which they receive from the faithful performance of his duty, has not heretofore been considered among the most honourable. In addition to this, the inadequacy of the compensation generally paid to teachers may be regarded as one of the principal reasons why the standard of instruction in so many of our common schools is not as elevated as it should be. The business of teaching is embraced by many as a merely temporary employment, and by no means as a regular profession for life. Nor does it follow that because a teacher possesses all the *learning* necessary for the school in which he is employed, he also understands or practises the best method of imparting knowledge to his pupils. It is not usually the most learned men who make the best teachers, unless they happen to possess the rare faculty of communicating instruction with facility, and in addition to their other knowledge understand also the *art of teaching*. A want of the proper kind of teachers must still be felt in our common schools until the profession shall be raised to its proper standard, and by a compensation and a standing in society equal to those enjoyed by the clergyman, the physician, or the lawyer, young men of talents, intelligence and high moral character shall be induced to qualify themselves for its duties and to embark in it as a permanent employment.

By a law passed in 1838, an appropriation to colleges, academies and female seminaries was made of the following amount annually for ten years. To each incorporated university and college, maintaining at least four professors, and constantly instructing not less than one hundred students, one thousand dollars. To each incorporated academy and female seminary, maintaining one or more teachers, and giving instruction to at least fifteen pupils in the Greek and Roman classics, mathematics and English, or Eng-

lish and German literature, three hundred dollars. To each of said academies and female seminaries where at least twenty-five pupils are instructed as above, four hundred dollars; and to each one maintaining at least two teachers and instructing forty or more pupils as above, five hundred dollars.

In pursuance of this law, \$7,378 were paid from the State treasury in 1842, to nine universities and colleges, viz. the University of Pennsylvania at Philadelphia, Lafayette college at Easton, Dickinson college at Carlisle, Pennsylvania college at Gettysburg, Marshall college at Mercersburg, Madison college at Uniontown, Washington college at Washington, Jefferson college at Canonsburg, and Allegheny college at Meadville. From six of these institutions reports were received in compliance with a resolution of the legislature passed in 1836, which requires the president, faculty, trustees, &c., of colleges and academies receiving aid from the commonwealth, to report to the superintendent of common schools, on or before the first of November annually, the number of students and graduates, the course of studies pursued, financial resources and expenses, the future prospects of their institutions, &c. In the six colleges which reported in 1842, there are 381 students in the collegiate, and 373 in the preparatory departments. The number preparing to become school teachers is 37 and the number of graduates 62. The medium price of tuition for each student is \$22.33, and the annual expense including board is \$120.66. From the University of Pennsylvania, and from Dickinson and Jefferson colleges, no reports were received.

The number of academies which receive a share of the State appropriations is 65, and the amount paid to them from the public treasury in 1842 was \$16,001. Only 39 of these academies made the annual report required by law. Those which reported have 2,108 pupils, of whom 360 are preparing to become school teachers. The medium cost of tuition for each pupil is \$15.31, and the whole annual expense of each is \$107.55.

The female seminaries entitled to a portion of the public funds are 41 in number, and received \$13,044. But 18 of these have made their annual report, from which it appears that the medium cost of tuition is \$18.53 per annum, and the whole annual expense of a pupil, \$132.20.

The total amount paid from the State treasury in 1842, to colleges, academies and female seminaries, was \$36,421.

In addition to the public schools established by law, and those maintained on the old system in the non-accepting districts, there are in the cities of Philadelphia, Lancaster and Pittsburg, as well as in many of the country towns, a number of excellent private schools supported by those who patronise this mode of education in preference to sending their children to the public schools. But as the character of the public schools becomes more elevated, and the course of instruction in them is becoming every year more thorough and comprehensive, we find the number of private schools to be gradually decreasing. The time is apparently not far distant, when the standard of education in our public schools

generally will be such as to cause them to be sought by all classes of society, on account of their superior excellence and the enlarged facilities which they afford to youth for the acquisition of a solid and practically useful education.

What is said of the early attention paid to education in Pennsylvania? Why is learning not so generally diffused in this State as in New England? In what year was the first school established in Philadelphia? When was the Friends' public school established? In what year was the academy founded and by whose exertions? When was it erected into a college, and when created a university? When and where were two classical schools early established? What provisions concerning education were contained in the first State constitution of 1776? What in that of 1790? What was provided by the law of 1809, and why was this plan not successful? What law concerning education was passed in 1831? When was the present school law passed, and what is its object? What constitutes a school district? How are the directors elected, and what are their duties? What amount of school tax may be levied? How much is annually appropriated by the State? What is said of the non-accepting districts? What is said of the organization of public schools in the city and county of Philadelphia? Into what schools are pupils first received there? Into which are they next removed, and what are they taught there? Who are admitted into the High school, and in what are they there instructed? How are the directors of the sectional schools chosen? How is the board of controllers constituted? What are the duties of the directors? Of the controllers? In what other city is there a similar organization? What was the number of school districts in the State in 1836, and how many had accepted the law? And in 1842? What number of schools and of scholars in 1836, exclusive of those in Philadelphia? What number in 1842? What was the amount of school tax raised in each of those years? How much was expended for public schools in the accepting districts? And in the whole State? What amount has been expended for school houses from 1836 to 1842, and what is said of improved care in regard to them? What proportion of the districts reported in 1836, and what in 1842? How many schools are reported besides those in Philadelphia, and how long are they kept open for instruction? What is the number of teachers, and their average compensation? The number of scholars, and the average cost of tuition for each? Mention the amount of the State appropriation, and of the school tax. How much is paid for the various purposes of education in the reporting districts? What is said of the economy of the present school system? What causes have had a tendency to retard the progress of the common school system in this State? What is the principal drawback upon the operation of the system at present? What reasons are assigned for the difficulty of obtaining a sufficient number of good teachers? What is the amount appropriated by law to each college, academy and female seminary? How many colleges are there in the State, and where situated? What is the number of academies? Of female seminaries? What amount was paid from the State treasury in 1842 to these institutions? What is said of private schools?

12. CRIME, AND ITS PUNISHMENT.

THE illustrious founder of Pennsylvania, with that mildness, wisdom and justice for which his character was so conspicuous, in his early laws for the government of the colony, greatly ameliorated and modified the severer features which distinguished the

criminal code of the mother country. He seems to have been aware that the certainty rather than the severity of punishment is most effectual in preventing crime, and that the great object of laws should be prevention rather than sanguinary punishment. The murderer only was condemned to suffer death; such crimes as robbery, burglary, forgery and many others, for which thousands have been executed in England without diminishing the frequency of the offence, were made punishable at hard labour for a time proportionate to the enormity of the crime, and by fines, forfeitures, &c. After the death of William Penn, an act was passed under the administration of Governor Keith, by which the criminal laws of England were in substance extended to the province, and remained in force until the period of the revolution, at which time no less than fourteen species of offences were punishable by death.

After the revolution the reform of the criminal law became an early subject of attention, and was enjoined by the constitution of 1776. Since that time there seems to have been a constant effort on the part of the legislature not only to graduate the punishment to the offence, but to devise a system by which the moral reform of convicts might be effected. The reproach applied to the old system, of which it has been said that the lawgivers found it less trouble to hang the criminal than to reform him, is not applicable to the criminal jurisprudence of Pennsylvania.

The enactment of just and lenient penal laws, and the establishment of a humane and effective system of prison discipline, have been subjects of anxious and unremitting attention with many of our wise, benevolent and public spirited citizens. The "Society for alleviating the miseries of public prisons" should long be held in grateful remembrance for their labours in this cause. The pernicious consequences of crowding the convicts together, which allowed unrestrained intercourse between the hardened offender and the juvenile delinquent, and by which the prison was made rather a school of vice than a place for moral instruction and reform, were early seen and earnestly represented. The legislature was repeatedly memorialized on the subject, and the erection of penitentiaries in suitable parts of the State for the more effectual employment and separation of the convicts was strongly urged.

In 1790, solitary cells were erected in the Walnut-street prison at Philadelphia, in which the law directed that the more hardened and atrocious offenders should be confined, and also that ordinary convicts should be kept apart, unless their employment did not admit of separation, in which case the keeper or his deputy must be present. By a law of 1794, prisoners for most offences were directed to serve some part of their sentence in solitary confinement, which in some instances mentioned in the law, might be extended to months or years. But with the scanty and confined accommodations of the then existing prison, it was soon found impracticable to carry these regulations into full effect; and it was finally determined to erect State penitentiaries on a plan adapted to solitary confinement, and of an extent sufficient to accommo-

date the increased number of prisoners consequent upon the growing population of the State.

The Penitentiary at Pittsburg was completed for the reception of convicts in 1827, and that at Philadelphia in 1829. They are somewhat similar in plan and design, both having separate cells for the confinement of each prisoner, carefully constructed with a view to prevent all intercourse or communication between the persons confined. The whole interior arrangement in these establishments is admirably devised for carrying into effect the two great leading principles in the system of Pennsylvania prison discipline: first, the recognition of moral reform as a principal aim of penitentiary punishment; and second, the complete separation of the prisoners, as the only mode by which this end can be obtained.

Convicts from the western district, which is composed of the counties of Fayette, Greene, Washington, Allegheny, Westmoreland, Somerset, Bedford, Huntingdon, Clearfield, M'Kean, Potter, Jefferson, Cambria, Indiana, Armstrong, Butler, Beaver, Mercer, Crawford, Venango, Clarion, Erie and Warren, are sent for confinement to the Western Penitentiary at Pittsburg. The remainder of the State constitutes the eastern district, from which criminals are sent to the Eastern Penitentiary at Philadelphia.

Each of these penitentiaries is managed by a board of inspectors appointed by the judges of the Supreme Court of the State. The inspectors have the general control and direction of the prisons, the appointment of the officers and agents employed about them, and they must visit the prison at least twice a week to see that all duties are faithfully performed. They must attend to the religious instruction of the convicts, and procure suitable persons to act as moral and religious instructors: they are also enjoined to visit the prisoners and ascertain whether any abuses exist in their treatment. A report must annually be made by them to the legislature, of the condition of the prisons, the number of convicts, their age, term of imprisonment, &c., with such observations on the efficiency of the system of solitary confinement as may be the result of their experience, together with such information as they may deem expedient for making these institutions effectual in the punishment and reformation of offenders.

Every criminal sentenced to imprisonment in the penitentiary must be immediately conveyed thither by the sheriff of the county in which he was convicted. On his arrival he is examined by the physician, bathed, cleaned, and dressed in the uniform of the prison. He is then examined by the clerk and warden, and note taken of his person, name, age, complexion and such other peculiarities as may serve to identify him; his clothing and such effects as he may have about him are preserved to be returned to him on his discharge. He is then conveyed to the cell assigned to him, which is marked with a particular number by which he is known, instead of by name, during his confinement.

The convicts are not permitted to receive any thing but the prison allowance; tobacco, wine, spirituous or fermented liquors are strictly forbidden, unless ordered by the physician. No person is

allowed to visit the prison without a written permission according to the rules of the inspectors, except certain official visitors, and none but official visitors can have any communication with the convicts.

On the discharge of a prisoner, his clothing and such effects as he may have had about him at the time of his reception are restored to him; and if the inspectors and warden have been satisfied with the morality, industry, and order of his conduct, they give him a certificate to that effect, and furnish him with four dollars in money, in order that he may have some means of support until he can obtain employment, and not be immediately tempted to commit crime from the necessity of his situation.

By the reformed penal laws of Pennsylvania, (act of 23d April, 1829,) punishment by solitary confinement at hard labour is to be inflicted for the following offences, with some others therein named:—

Murder in the second degree; for the first offence not less than four nor more than twelve years; for the second offence during life.

Manslaughter; for the first offence not less than two nor more than six years; for the second, not less than six nor more than twelve years.

High treason; first offence not less than three nor more than six years; for the second, not exceeding ten years.

Arson; maliciously burning buildings, stacks of hay, grain, &c., first offence not less than one nor more than ten years; for the second, not exceeding fifteen years.

Burglary; for the first offence not less than two nor more than ten years; for the second, not exceeding fifteen years.

Forgery, counterfeiting coin, bank-notes, checks, &c. or counterfeiting the hand or seal of another person with intent to defraud; first offence not less than one nor more than seven years; for the second, not exceeding ten years.

Robbery; for the first offence not less than one nor more than seven years; for the second not exceeding twelve years.

Kidnapping; for the first offence not less than five nor more than twelve years; for the second twenty-one years.

Horse stealing; for the first offence not less than one nor more than four years; for the second, not exceeding seven years.

Perjury, or subornation of perjury; for the first offence not less than one nor more than five years; for the second, not exceeding eight years.

Persons sentenced by the county courts to confinement for larceny and other offences, for a period of one year or more, are sent to the state penitentiaries, except in the counties of Philadelphia, Chester, Dauphin, and Allegheny, where those sentenced for less than two years are to be confined in the county prisons.

In the county prison of Philadelphia, the principle of separate confinement, the treatment of prisoners, and the general regulations are similar to those of the penitentiaries. In Chester, Dauphin, and Allegheny, prisons have lately been erected on the plan of

separate apartments for each prisoner, the advantages of solitary confinement being now generally recognized in Pennsylvania.

It is clearly proved, by prison statistics generally, that intemperance is the fruitful source of crime as well as of other great evils which afflict society; and it is also evident that the want of education and of proper moral culture in youth tends to produce that debased state of mental degradation which leads men to commit offences, by diminishing their sense of moral responsibility. But the time has now arrived when we may reasonably hope for improvement in this respect. The progress of temperance, by reforming the habits of society, will diminish the frequency of crime: our system of public education will also have its effect in producing a reform, and in bringing about a better and happier condition of public morals by promoting the growth of republican virtues.

What is said of the criminal laws enacted in the time of William Penn? What change in them took place after his death? Since the revolution what has been done on this subject? When, and where was solitary confinement partially introduced? What was directed by the law of 1794, and why could it not be carried into full effect? When, and where were penitentiaries erected? What is said of them, and of their interior arrangement? What part of the State belongs to the western, and what to the eastern district? How are the penitentiaries managed? What are the duties of the inspectors? What is done with the prisoners on their arrival? What is said of the treatment of convicts, and of the admittance of visitors?—Of the discharge of prisoners? How long is the period of imprisonment by law for the several offences named? What is said of some county prisons? Mention the principal causes which lead to the increase of crime. What grounds have we to hope for improvement in this respect?

13. PAUPERISM, AND THE POOR LAWS.

Among a population so generally characterized by habits of industry and economy as that of Pennsylvania, cases of absolute pauperism are of comparatively rare occurrence. But few are dependent upon public charity for their support, except those who are disabled by age or bodily infirmity from acquiring a livelihood by the efforts of their own industry; or those whose idle and vicious habits of indulgence in dissipation and intemperance have brought them to a state of destitution and misery. The swarms of vagrants and beggars who infest the streets and roads in many parts of Europe are happily unknown among us, and the few solitary mendicants whom we sometimes see strolling about are generally foreigners who prefer this method of gaining subsistence to that of honest employment.

The happy influence of our free institutions in causing a fair remuneration to be paid as the wages of labour; the abundance and cheapness of our agricultural productions for food; the thousands of acres of uncultivated land within the commonwealth; and the profitable labour exercised in improving the soil now cultivated, by which its product is greatly increased—all combine to ren-

der employment easy to be obtained and fairly rewarded. To this may be added the extending variety and enormous increase of our manufactures; the developement of our mineral resources; the multiplication of buildings and works of improvement; and the numerous other growing demands for labour within our own borders; by all which we shall perceive that there need be no idle hands among us, and consequently no poor but the few whom misfortune, indolence or vice prevents from reaping the sure reward of industry. Our situation in this respect is widely different from that of those countries in Europe which are overburdened with a redundant population, where the productions of the soil and the reward of labour are insufficient for the support of the people, and where indigence, misery, and crime must be the necessary consequence of want of employment.

The spirit of our laws on the subject of pauperism is humane and charitable. Overseers or guardians of the poor are chosen in the several townships and districts throughout the State, whose duty it is to provide for the employment of such poor persons belonging to the district as are able to work, but cannot find employment, and to provide the necessary means of subsistence for those who, by reason of age, disease or infirmity, are unable to labour for their own support. These officers, with the approbation and consent of two magistrates of the county, may put out as apprentices, until of lawful age, those poor children whose parents are unable to maintain them. It is also their duty to furnish temporary relief, if applied for by such poor persons within the district as may not have a settlement therein, until they can be removed to the place where they legally belong.

In many of the counties, houses for the relief and employment of the poor have been erected at the public expense, most of which are large and well constructed edifices, so arranged as to combine comfort, convenience, and economy, where the sick, the aged, and the infirm find a quiet and comfortable retreat. A farm is usually attached to each county poor house, the lighter labour of which is performed by such of the paupers as are not disabled by age or infirmity; and workshops are provided for those whose previous occupations or personal inability for out-door labour, render it expedient to employ in mechanical or manufacturing pursuits. The women are occupied in spinning, sewing, and various household duties. The paupers thus assist in the management of the farm which yields them support; they make and repair farming utensils and articles of domestic use; they spin, weave and make up most of their own clothing; and thus, if the establishment be well managed, materially diminish the burden of their support which falls upon the tax payers of the county.

Our poor taxes appear very trifling when compared with those paid in England, and the general condition of our paupers is much more comfortable. The poor rates in that country are said to amount to about £8,000,000, or nearly \$40,000,000. It is estimated that of their population of 11,000,000, about 1,200,000 receive assistance as paupers, though this aid is by no means shared

by all who are miserably poor. Some accounts make the poor of England amount to one third of the whole population.

Beside the assistance afforded to our poor by means of the pauper system established by law, we have numerous charitable associations and benevolent societies, who do much towards alleviating the condition of the poor within their respective spheres of action. These, in our cities and large towns, are eminently useful, and afford relief to many who are reluctant to apply to the official guardians of the poor, or who, having once been placed in better circumstances, would sooner suffer the miseries of destitution than ask support from the public charity. The benevolent spirit of our community is so generally exercised that few cases of absolute suffering from want occur, except perhaps some in the severe cold of winter, and these are generally relieved as soon as they become known.

What class of people are dependent upon public charity for support? Give some reasons why we have but few paupers in Pennsylvania. Why are some countries in Europe so different from ours in this respect? Mention some of the provisions of our laws in reference to providing for the poor. What is said of county poor houses? How are the paupers employed? What is said of our poor taxes in comparison with those of England? By what other means are our poor relieved?

14. GOVERNMENT AND LEGISLATION.

The Constitution of Pennsylvania, adopted in 1790 and amended in 1838, provides for a form of government consisting of three branches, Legislative, Executive, and Judiciary, to which is entrusted the power of enacting, executing, and administering the laws of the State.

The Legislative power is vested in the General Assembly, which consists of a Senate and a House of Representatives.

The present number of Senators is thirty-three, who are chosen by districts, and elected for three years, one third of the whole number being elected every year. A senator must be not less than twenty-five years of age, a citizen and inhabitant of the State four years next before his election, the last year of which he must have resided in the district for which he is elected.

The House of Representatives consists of one hundred members, who are elected annually. A representative must have attained twenty-one years of age, and must have been a citizen and inhabitant of the State three years next preceding his election, the last year of which he must have resided in the district for which he is chosen.

The General Assembly meets on the first Tuesday of January in every year, unless sooner convened by the Governor. Each House chooses its Speaker and other officers; judges of the qualifications of its own members, and determines contested elections. A majority of each House constitutes a quorum to do business;

but a smaller number may adjourn from day to day. Each House may determine the rules of its proceedings, punish its members for disorderly behaviour, and with the concurrence of two thirds may expel a member. Neither House can, without the consent of the other, adjourn for more than three days, nor to any other place than that in which the two Houses shall be sitting. All bills for raising revenue must originate in the House of Representatives; but the Senate may propose amendments. Every bill which shall have passed both Houses must be presented to the Governor for his signature: if he approve, he must sign it; if not, he must return it, with his objections, to the House in which it originated. If both Houses then agree to pass it by a vote of two thirds of each House, the bill becomes a law without the assent of the Governor. Any bill which is not returned by the Governor, within ten days after it is presented to him, becomes a law, in like manner as if he had signed it, unless the General Assembly prevent its return by adjourning; in which case it becomes a law unless sent back within three days after their next meeting.

No corporate body with banking or discounting privileges can be created, renewed, or extended, without having given six months' previous public notice of their intended application for the same: no charter for such purposes can be granted for a longer period than twenty years; and the Legislature reserve the right to revoke, alter, or annul the same if found injurious to the citizens of the commonwealth. No divorce can be granted by the Legislature in cases where the courts have such power by law.

The Executive power is vested in a Governor, who holds his office for three years from the third Tuesday of January next ensuing his election; but who cannot hold it for longer than six, in any term of nine years. The Governor must be at least thirty years of age, and a citizen and inhabitant of the State seven years next before his election. He is commander-in-chief of the military force of the commonwealth, except when they are called into the actual service of the United States. He has power to remit fines and forfeitures, and to grant reprieves and pardons, except in cases of impeachment. He appoints a Secretary of the commonwealth, and nominates to the Senate, for confirmation, the Judges of the Courts. He has power to convene the General Assembly upon extraordinary occasions; and it is his duty to take care that the laws be faithfully executed. In case of the death, resignation, or removal of the Governor, the Speaker of the Senate exercises the duties of the office until another Governor shall be elected.

"In elections by the citizens, every white freeman of the age of twenty-one years, having resided in this State one year, and in the election district where he offers to vote, ten days immediately preceding such election, and within two years paid a State or county tax, which shall have been assessed at least ten days before the election, shall enjoy the rights of an elector; but a citizen of the United States, who had previously been a qualified voter of this State; and removed therefrom and returned, and who shall have resided in the election district, and paid taxes as aforesaid,

shall be entitled to vote after residing in the State six months:—*Provided*, That white freemen, citizens of the United States, between the ages of twenty-one and twenty-two years, and having resided in the State one year, and in the election district ten days as aforesaid, shall be entitled to vote, although they shall not have paid taxes.”

The Judiciary power is vested in a supreme court, in courts of oyer and terminer, and general jail delivery, courts of common pleas, orphans’ and registers’ courts, a court of quarter sessions for each county, and in justices of the peace. The judges of the several courts are nominated by the Governor, and with the consent of the Senate are appointed and commissioned by him. The judges of the supreme court hold their offices for fifteen years; the president judges of the courts of common pleas and other courts of record, and all other judges required to be learned in the law, are appointed for ten years; and the associate judges of the courts of common pleas, for five years. But for any reasonable cause, which shall not be sufficient ground of impeachment, the Governor may remove any of them on the address of two-thirds of each branch of the Legislature.

Sheriffs and Coroners of the several counties are elected by the people, for three years; but no person can be twice elected sheriff in any term of six years. Prothonotaries of the supreme court are appointed by the court: prothonotaries and clerks of the other courts, recorders of deeds, and registers of wills are elected by the people and commissioned by the Governor, for three years.

Justices of the peace and aldermen are elected by the qualified voters in the several wards, boroughs and townships, and are commissioned by the Governor for a term of five years.

No person can be appointed to office in any county who has not been a citizen and inhabitant therein, for one year next before his appointment. No member of Congress from this State, or any person holding an office of trust or profit under the United States, can hold any office in this State to which a salary or emoluments are annexed by law. No member of the Senate or House of Representatives can be appointed by the Governor to any office during the term for which he is elected. All officers for a term of years hold their offices only on the condition of good behaviour, and may be removed on conviction of misbehaviour in office or of any infamous crime. Any person who shall fight a duel, or send a challenge for that purpose, or be aider or abettor in fighting a duel, is deprived of the right of holding any office of honour or profit in this State, and may be otherwise punished according to law.

In the Declaration of Rights attached to the Constitution of Pennsylvania, it is declared among other things: That all men are born equally free and independent; that all power is inherent in the people, and all free governments founded on their authority: That all men have a right to worship God according to the dictates of their own consciences;—that no man can of right be compelled to erect or support any place of worship or maintain any ministry

against his consent, and that no preference shall ever be given by law to any religious establishment or mode of worship. The freedom of elections, of the printing press, and the right of trial by jury are affirmed. It is declared that the people shall be secure in their persons, houses, papers, and possessions, from unreasonable searches and seizures: that in all criminal prosecutions the accused has a right to be heard, and that he cannot be compelled to give evidence against himself, or be deprived of life, liberty, or property, unless by the judgment of his peers or the law of the land. No person can be twice put in jeopardy of life or limb for the same offence; nor can any man's property be taken for public use without the consent of his representatives and without just compensation being made. Excessive bail shall not be required, excessive fines imposed, nor cruel punishments inflicted. Imprisonment for debt is not to continue after delivering up the estate for the benefit of the creditors, unless there is strong presumption of fraud. No *ex post facto* law, or law impairing the obligation of contracts can be made. It is declared that the citizens have a right to assemble in a peaceable manner, and to apply for redress of grievances by petition, address or remonstrance: that the right of the citizens to bear arms in defence of themselves and the State shall not be questioned:—That no standing army shall in time of peace be kept up without consent of the Legislature,—and that the military shall at all times be in strict subordination to the civil power.

Amendments to the Constitution of the State may be proposed in the Legislature, and if agreed to by a majority of both Houses, are to be entered on their journals; the Secretary of the commonwealth is then to cause the amendments to be published three months before the next election, in at least one newspaper in every county; and if the next Legislature shall agree to the amendments, they are again to be published in the same manner; after this, if the people shall ratify and approve such amendments by a majority of the qualified voters of the State voting thereon, such amendments shall become a part of the Constitution; but no amendment or amendments shall be submitted to the people oftener than once in five years.

Of what three branches does our government consist? How is the legislative power vested? What is the number of senators, and how elected? Mention the qualifications of a senator. How many members are in the house of representatives, and how elected? What are the qualifications of a representative? When does the legislature meet? What are the powers exercised by each house? What is done with bills after having passed both houses? What if the governor should not approve them? What is said of corporate charters and divorces? How is the executive power vested? For how long is the governor elected? What are the qualifications for governor? What powers has he? In what manner is a vacancy in the office supplied? Who are entitled to vote at elections? In what courts is the judiciary power vested? How are the judges appointed, and how long do they hold their offices? In what manner, and for how long, are sheriffs, coroners, prothonotaries, clerks, registers, &c., chosen?—Justices of the peace and aldermen? What persons are disqualified from holding office under the State constitution? What provisions of the declaration of rights can you mention? How may amendments to the constitution be made?

15. DEFENCE.

The defence of the State is entrusted to the militia of the commonwealth; the constitution declaring that "no standing army shall in time of peace be kept up without the consent of the legislature; and the military shall in all cases, and at all times, be in strict subordination to the civil power."

Unlike the governments of Europe, where the support of standing armies is a heavy burden upon the people, our free institutions and the republican simplicity of our government require the maintenance of no armed force for their support. A government emanating directly from the people, and subject to their will, can have no employment for a military force except to repel foreign aggression or to quell domestic violence. As a member of the Union, Pennsylvania has a right to protection by the federal government against a foreign enemy; and instances of domestic turbulence are so rare and so little formidable among us, as to be generally soon quieted by the civil power. In a moral and intelligent community, the principle and the practice of self-government supersedes the necessity of employing force; and a great saving of expense to the people is the natural consequence of order and obedience to the laws.

Our State constitution provides that "the freemen of this commonwealth shall be armed, organized, and disciplined for its defence, when and in such manner as may be directed by law:—Those who conscientiously scruple to bear arms shall not be compelled to do so, but shall pay an equivalent for personal service."

By the existing laws of the State, every free able-bodied white male person, who has resided within the commonwealth for one month, and is between the ages of eighteen and forty-five, is to be enrolled in the militia. Those exempted from militia duty are the vice president, judicial and executive officers of the United States, members of congress, custom house officers, persons employed in carrying the mail, postmasters, inspectors of exports, pilots, and mariners employed in the sea-service, ministers of religion, teachers, members of the board of health, directors and controllers of the public schools in the first school district, judges of the courts, mayors and recorders of cities, servants of foreign ambassadors and consuls, sheriffs, gaolers and keepers of work houses.

The militia of the commonwealth is therefore enrolled and organized into divisions, brigades, regiments, and companies, electing their own officers, and meeting at stated times for parade and exercise in military duty. Our militia system is, however, so confessedly defective and so little popular, as to have fallen into a state of neglect and even of contempt in some parts of the State. Those who feel an interest in military affairs, and are desirous to improve themselves in martial knowledge and practice, mostly decline to appear in the ranks of the militia, and have formed themselves into volunteer companies, which are handsomely uniformed, armed, and equipped, and frequently parade for exercise and im-

provement in military tactics and discipline. They present, in general, a soldier-like appearance, are well drilled in the manual exercise, and a martial spirit is kept up among them which, in the event of their being called into service, would render them a much more effective force than the undisciplined and irregular body of the militia.

The militia force of Pennsylvania consists of 17 divisions, containing 35 brigades, 148 regiments, 1,312 companies, and 201,666 men. The volunteer companies are 564 in number, containing 33,458 men, of which 4,772 are cavalry, 3,829 artillery, 11,994 infantry, and 12,863 riflemen: thus making the total effective force of the State 235,124.

The expense of the militia system to the State in 1842 was \$33,164.94. Of the large amount of militia and exempt fines paid for non-performance of military duty, only \$13.30 reached the State treasury in that year!

Arsenals for the preservation of ordnance, arms and military stores belonging to the State have been erected at Philadelphia, Harrisburg, and Meadville. There are also several belonging to the United States.

The fortifications within the limits of Pennsylvania are Fort Mifflin on the Delaware, and the works for the defence of the harbour at Erie, which are supported by the general government. The naval defence of the commonwealth is also entrusted to the government of the United States.

To whom is entrusted the defence of the State? Why is no standing army required in this, as in the governments of Europe? What is said of the advantages of self-government? What are the requirements of the State constitution in reference to the militia? Who are to be enrolled by law? What persons are exempt from military duty? How is the militia organized? What is said of the militia system? Of volunteer companies? Mention the number of militia and of volunteers. What is the total military force of the State? What is the annual cost to the State for militia expenses? What amount of fines is paid into the treasury? Where are State arsenals erected? What is said of fortifications, and of naval defence?

16. FINANCES, REVENUE AND TAXATION.

THE financial affairs of Pennsylvania are at the present time in a state of considerable embarrassment and difficulty. The practice of borrowing money on the credit of the State, in order to prosecute our extended system of public improvements, has been so long persisted in, without any adequate provision having been made for the redemption of the loans or the payment of the interest accruing upon them, that our State debt has reached the enormous amount of more than forty millions of dollars.

The revenue arising from the tolls on the State canals and rail roads has not been found sufficient to meet the annual expenditures on them; much less to aid in paying the interest on the cost of their construction. In order to meet the deficiency, money has again been borrowed to pay the interest due on former loans; and thus the State debt has gone on increasing from year to year, while the work on new and unfinished lines of canal has still been carried on by a further extension of State credit.

But though Pennsylvania is thus involved in debt by the construction of her rail roads and canals, it should be remembered in the consideration of this subject, that these public works have added far more to the intrinsic value of the State than their actual cost. The increased facilities and the reduced prices of transportation and travel; the great rise in the value of land in many parts of the State, from the creation of a market for produce, or the easy and cheap means of conveyance to a market; the reduced cost and more abundant supply of merchandise in the interior of the State; the developement of our mineral wealth and the ready transportation to places of consumption of our inexhaustible supplies of coal and iron; all these, and many other advantages to the citizens of Pennsylvania have accrued from the construction of her public improvements. Thus while the people have been reaping the advantage, the State has become embarrassed with debt; and the only means which now remains to extricate the treasury from its difficulties, is for the people to contribute a portion of that which they have gained from the use of the public works, towards paying their cost and sustaining the credit of the State.

The value of the real estate in Pennsylvania has been estimated at \$1,300,000,000, and the personal property at 700,000,000; making the total value of property in the commonwealth amount to \$2,000,000,000. A tax of one mill to the dollar, or ten cents to the hundred dollars, if fairly assessed upon the whole of this amount, would yield 2,000,000 per annum; or a tax of two per cent. would pay the 40,000,000 of State debt at once.

The annual productions of the State, agricultural, manufacturing, and mineral, are worth about \$200,000,000, one per cent. on which would pay the interest on the State debt. It will thus be seen that $\frac{1}{100}$ of the property in the State, or one per cent. of the annual productive industry of the people, will pay the interest on our debt; while the payment of two per cent. of the value of property within the commonwealth would at once free us from the State debt. Viewing the subject in its true light, it will be therefore apparent that Pennsylvania, instead of being bankrupt, is abundantly able to meet all her liabilities; and that her creditors have in her inexhaustible resources and the industry and integrity of her people a sure guaranty of the public faith.

The revenue of the State is drawn from various sources, the principal of which, with the amount derived from each, will be seen by the following abstract from the Auditor General's report of receipts and expenditures for 1842.

Receipts.

Lands and land office fees	\$21,846 85
Auction commissions and duties	77,287 38
Dividends on stocks owned by the State	35,778 79
Tax on bank dividends and corporations	82,008 79
Tax on writs, offices, and salaries	45,483 41
Tax on collateral inheritances	38,717 44
Tax on real and personal estate	486,635 85
Tavern licenses	50,275 59
Retailers' licenses	84,178 57
Brokers' and pedlers' licenses	7,349 45
Canal and rail road tolls	907,093 12
Loans	934,764 83
Militia and exempt fines	13 30
Sundry other sources	4,751 16
Miscellaneous	4,423 87
	<hr/>
	\$2,780,608 40

Expenditures.

Commissioners of internal improvement fund	\$1,987,353 29
Expenses of government	329,337 61
Rail road and canal companies and turnpikes	31,705 86
Militia expenses	33,164 94
Pensions and gratuities	44,151 66
Education	315,372 43
Loans	221,394 33
Interest on loans	44,767 79
Penitentiaries and House of Refuge	28,021 00
Damages on canals and rail roads	32,992 10
Delaware division of canal	27,747 85
Domestic creditors	209,589 43
Premiums on silk	6,716 77
Seat of government and State library	4,697 76
Sundry other expenses	11,823 30
Miscellaneous	7,523 39
	<hr/>
	\$3,336,359 51

The Judiciary system of Pennsylvania is the most expensive in the Union, costing the State for the maintenance of the several courts upwards of \$106,000 per annum; while that of New York, larger and more populous than Pennsylvania, costs the State but \$35,128. The legislative expenses in Pennsylvania are very great, and require extensive reform: the State printing alone amounts to about \$60,000 a year; that of New York, which is done in a style much superior to ours, costs \$28,241. Our militia system is supported at an annual expense to the State of more than \$33,000; in New York this item of State expenditure is \$18,171. These comparisons are made for the purpose of showing that a more strict

economy in the expenses of government is required in Pennsylvania. In these times of financial embarrassment, a searching and thorough reform is required; and such items of State expenditures as are excessive or extravagant should be at once materially reduced, or abolished as uselessly burdensome to the people.

In what condition are the finances of Pennsylvania, and what is the amount of the State debt? To what causes is this to be attributed? What advantages have resulted to the people from the construction of the public works? By what means can the treasury be relieved from difficulty? What is said of the value of property in the State, and the amount of taxation necessary to pay the principal and interest of the State debt? What is the estimated value of the annual productions of Pennsylvania, and the proportion requisite to pay the interest? What may we conclude from this concerning the ability of the State to meet her obligations? Mention the principal sources of State revenue.—The chief items of expenditure. What is said of certain expenses, and of the necessity of reform?

17. PRODUCTIONS.

In order to give a proper view of the immense resources of Pennsylvania, and to show the value and importance of her various productions, they will be considered under the following general divisions: 1. Of Agriculture: 2. Of the Manufactory: 3. Of the Mine: 4. Of the Forest.

Our statements of the quantity and value of these productions are founded upon the returns of the marshals who took the census of 1840; the returns of the commissioners of the several counties to the secretary of the Commonwealth in 1839, and upon much valuable information derived from other sources. The census returns generally fall short of the real amount, owing, perhaps, not so much to a neglect of duty on the part of the officers employed, as to the unwillingness of the people in many parts of the State to give correct answers respecting the amount and value of their property and produce, from an apprehension that the inquiries were made with a view to the increase of taxation.

1. *Productions of Agriculture.*

Pennsylvania has long been distinguished for excellence in this branch of domestic industry, and there is probably no State in the Union in which the business of farming is managed on a large scale with such decided success and advantage. Much of our soil is naturally fertile, and requires little aid, except the requisite culture, to cause the growth of abundant crops. In many portions of the State, less favoured by nature, the skill and industry of our farmers have been so successfully exerted upon poorer soils as to render them highly productive, and in many cases to convert barren wastes into fruitful and luxuriant fields. A careful attention to the collection and use of proper manures, among which lime is beginning to be justly considered as one of the most important;

the use of the best ploughs and other agricultural implements; a judicious rotation of crops well planted and tended; and a general regard to neatness and economy in all their operations, are the distinguishing characteristics of Pennsylvania agriculturists in the older settled parts of the State.

The system of cropping varies in different districts; the following is one of the most common in the eastern counties. A field which has been in pasture is ploughed up for Indian corn late in the fall, or more usually, early in the spring. The corn is planted in the beginning of May, and well dressed and tended through the early part of summer: about the last of October it is gathered, yielding from twenty-five to fifty bushels per acre, and on rich soils frequently more. About the first of the following April, the same field is again ploughed, and sown with oats, which is harvested towards the end of July, producing from twenty-five to fifty bushels to the acre. The oats' stubble is then ploughed in, and the field, being well manured, is sown with wheat in the latter part of September. Rye is frequently sown instead of wheat, where the soil is light and thin, or where it is not manured; and many farmers sow both wheat and rye. In February or March, clover or other grass seeds are sown on the wheat and rye, which grow among the grain until harvest. The wheat and rye are generally fit to cut early in July, and commonly yield from fifteen to thirty bushels per acre. The field is by that time covered with young clover which is left until the following summer, when it is cut for hay in June, and a second crop gathered for seed in September. The field may be mown again the following year, or pastured until it comes again in course for Indian corn. Some farmers prefer sowing their wheat on a field freshly broken up from the grass sod; some omit the crop of oats between the corn and the wheat or rye; others take off the Indian corn early and sow wheat or rye immediately after it. The mere order of succession in the different crops is not very important, provided that the farmer is careful not to exhaust his land by too frequent repetitions, or by neglecting to plough, manure and dress his fields in the best manner.

Beside the grains already mentioned, buckwheat, flax, barley, potatoes, turnips, beets and many other articles are cultivated. Different modes of culture and tillage are practised in different parts of the State, according as the variety of soil, climate or situation renders it necessary or expedient. In the more elevated and colder districts the cultivation of Indian corn is not very successful; but grass, oats and potatoes thrive admirably. In those parts where the soil is better adapted to grazing than tillage, the rearing and fattening of cattle and sheep is extensively pursued. Near the cities and large towns, where the farms are generally smaller, fruit, vegetables, poultry, fresh butter and other articles for immediate consumption are found profitable and occupy much attention. Scarcely a farm is to be found without its apple orchard of choice and selected varieties. Pears, peaches, plums, cherries and other fruit are abundant, and though some farmers have been

careful to obtain the finest kinds, there is not generally sufficient attention paid to selecting and grafting the best varieties of fruit.

There is perhaps no class of men upon the earth more truly independent, or who have the means of happiness more immediately within their reach than the farmers of Pennsylvania. They are generally themselves the owners of the soil which they cultivate; surrounded by comfort and plenty they find their substance steadily increasing by industry and economy; and though they may not acquire wealth so rapidly as is sometimes done by those who follow mercantile occupations, yet they are secure from sudden reverses of fortune, and free from the harassing anxieties and the feverish excitement of commercial speculation.

The traveller in the older settled parts of Pennsylvania is particularly struck with the neat and substantial appearance of the buildings, fences, &c., as well as the order and convenience of the whole domestic arrangement of a well regulated farm. The pride of a Pennsylvania farmer is his barn, many of which are from 60 to 120 feet in length and substantially built, either wholly of stone, or the lower story of stone and the superstructure of wood, handsomely painted or white-washed. The interior arrangement of stables, thrashing floor, granaries, places for depositing hay, &c., is admirably convenient and useful. The horses, cattle and other domestic animals are comfortably sheltered during the winter, and like their master and his family, enjoy the plenty provided by good husbandry and provident industry.

Within the last few years considerable attention has been given to improving the stock of domestic animals; a subject which had been too much neglected by our farmers. The horses of Pennsylvania have generally been bred more with a view to draught than to swiftness, in accordance with the quiet pursuits of their owners, who prefer the sure speed of the plough and the wagon to the exciting and hazardous sport of the race course. Oxen are frequently used for labour, particularly in the newly settled and rougher parts of the country; and mules are becoming numerous, being preferred to horses for many kinds of employment, particularly at the coal mines and iron works.

The breed of milch cattle has been recently much improved by the importation of many noble animals from England, and so manifest is the advantage that it will probably not be many years before the present inferior stock will have disappeared from every good farm in the State. The sheep have been also much improved by crossing with the Spanish and English breeds; and even the swine are now ennobled by alliances with European families of their kind. The increased attention bestowed upon the improvement of their stock by many of our most judicious and enterprising farmers will operate as an example to others; and it is to be hoped that many years will not have elapsed before a nobler race of domestic animals will supplant the present inferior breeds.

The number and average value of each description of live stock in Pennsylvania is nearly as follows:

Horses and Mules	365,129	at \$60.00	\$21,907,740
Neat Cattle	1,172,665	15.00	17,589,975
Sheep	1,767,620	2.50	4,419,050
Swine	1,503,964	3.50	5,263,874
Poultry	estimated value	.	685,801

The following statement of the principal agricultural products of Pennsylvania annually is believed to be considerably below the real amount.

Wheat	13,213,077 bushels.	Hay	1,311,643 tons.
Rye	6,613,873 "	Flax and Hemp	2,650 "
Indian corn	14,240,022 "	Hops	49,481 pounds.
Oats	20,641,819 "	Wax	33,107 "
Buckwheat	2,113,742 "	Tobacco	325,018 "
Barley	209,893 "	Silk cocoons	7,262 "
Potatoes	9,535,663 "	Sugar	2,265,755 "
Wool	3,048,564 pounds.	Wine	14,328 gallons.
Value of products of the dairy, \$3,187,292.			
Value of products of orchards and gardens, \$901,218.			

II. *Productions of Manufactures.*

The productions of the manufacturing industry of Pennsylvania are so various, and so little authentic statistical information has been collected respecting them, that we shall only be able to give a general and imperfect sketch of this division of our subject. The account of such branches of manufactures as were embraced in the late census appears in many cases to be imperfect, and manufactured articles to a considerable amount, as well as home made family goods and other productions in the minor departments of domestic industry, are believed to be not fully contained in the returns of the marshals.

Iron.—The production and manufacture of iron, the great staple of Pennsylvania, ranks first in importance; the ore being the product of our own soil and wrought into value by the laborious industry of our own people. Whatever of this material is manufactured in the State is so much additional wealth gained; and almost every department of manufacturing industry is in some measure dependent upon this indispensable article. Not a furrow can be turned by the ploughman without the aid of iron; every house erected, every mechanical trade carried on, every canal or rail road constructed, every ship built, every implement of national defence used, must be by the employment of iron. The support of the people employed in this branch of manufactures, with their families, and of the horses and mules used about the iron works, consumes a large amount of agricultural produce and affords a market for the farmers in their neighbourhood, thus encouraging this branch of industry as well as many mechanical employments.

The counties most noted for the production of iron are Northampton, Lehigh, Berks, Lancaster, York, Cumberland, Franklin, Bedford, Huntingdon, Centre, Columbia, Armstrong, Venango, and Clarion. In several other counties considerable quantities of iron are produced from furnaces and forges; rolling mills, nail

works, foundries and other manufactories in which iron is the principal material are also numerous in many parts of the State.

Pennsylvania has 213 furnaces for the manufacture of pig iron and castings, which according to the census returns of 1840, produce annually about 100,000 tons. There are also 169 forges, bloomeries and rolling mills, manufacturing annually 87,244 tons of bar, rod, sheet and boiler iron and nail plates. The capital invested in our iron works is nearly \$8,000,000, and the men employed about 12,000, who with their families may be estimated at nearly 100,000 persons deriving subsistence from this branch of our manufactures.

Flour, Grist, Saw, and Oil mills.—The number of flour mills in the State is 736, manufacturing 1,193,405 barrels of flour annually: grist mills 2,554; saw-mills 5,389; oil mills 166: the total value of these branches of manufactures is \$9,424,955. They give employment to about 8,000 men, and nearly \$8,000,000 of capital.

Cotton goods.—The number of cotton factories is 105, containing 146,494 spindles; the establishments for dyeing and printing cottons are 40: value of manufactured articles, upwards of \$5,000,000: persons employed 5,522; capital invested \$3,325,400.

Woollens.—Of woollen manufactories we have 235, together with 346 fulling mills, which produce annually woollen goods to the amount of \$2,319,061, and afford employment to about 3,000 persons. The amount of capital invested in this branch of manufactures is upwards of \$1,500,000.

Silk.—The quantity of reeled and other silk made in the State annually is about 2,350 pounds, valued at \$14,644.

Flax.—Though the manufactures of family goods from this article have much diminished since the general introduction of cotton fabrics, it yet seems evident that the valuation of \$75,672 given to them by the census returns is considerably below the real amount.

Mixed goods.—The value of mixed manufactures is \$1,098,810; persons employed about 4000; capital invested \$287,859.

Home made family goods.—Value \$1,303,093.

Leather.—The number of tanning establishments is 1,170, which produce annually 415,665 sides of sole, and 405,993 sides of upper leather; employing 3,445 men and \$2,783,636 of capital invested. Of other manufactories of leather, saddleries, &c., there are 2,223, manufacturing articles amounting in value to \$3,482,793 annually.

Hats, caps, bonnets, &c.—This branch of industry employs 1,470 persons, who produce hats and caps to the amount of \$820,331; straw bonnets valued at \$80,512; capital invested \$449,407.

Tobacco is manufactured to the value of \$550,159, employing 950 persons.

Soap and Candles.—The quantity of soap made is 5,097,690 pounds; of tallow candles 2,316,843 pounds; of spermaceti and wax candles about 5,000 pounds; but a very large amount of soap and candles is made in families, which is not contained in this estimate.

Distilled and fermented liquors.—Although the number of distilleries has much diminished within the last few years, we yet have 1,010 remaining, which produce 6,240,193 gallons of spirituous liquors annually. The number of breweries is 82, making 12,765,974 gallons of fermented liquor. These branches of business employ 1,607 men, and a capital of \$1,589,471.

Drugs, medicines, paints, &c.—The various manufactures of drugs, medicines, paints, and dyes, are valued at \$2,100,074; of turpentine and varnish at \$7,865, employing 519 men, and requiring a capital of \$2,179,625.

Glass, earthenware, &c.—For the manufacture of glass we have 28 glass houses, and 15 establishments for cutting glass, which employ 835 men and produce articles to the value of \$772,400. The number of potteries is 182, and the value of their productions is \$157,902.

Sugar, chocolate, confectionery, &c.—The number of sugar refineries is 20, and the value of their products \$891,200; value of chocolate manufactured \$14,000; of confectionery made \$227,050.

Paper.—Of paper manufactories there are 87, which produce this article to the amount of \$792,335: value of all other manufactures of paper, cards, &c., \$95,500. The amount of capital invested in this business is \$581,800, and the men employed about 800.

Printing and book-binding.—The number of printing offices is 224, and of establishments for book-binding 46. Of the *newspapers* published in the State, 18 are daily, 165 weekly, 10 semi and tri-weekly; and 42 periodical publications. Men employed 1,709; capital invested \$681,740.

Musical instruments are manufactured to the amount of \$33,728.

Carriages and wagons.—This branch of domestic industry employs 2,783 men, who manufacture articles valued at \$1,207,252.

Ships and cordage.—The value of ships and vessels built is estimated at \$668,015: the number of rope walks is 39, in which 272 men are employed, and the value produced is \$274,120.

Powder.—The number of powder mills is 30, and the quantity of gunpowder manufactured is 1,184,225 pounds.

Machinery.—In this flourishing and rapidly increasing branch of manufactures, the annual value of the articles produced already amounts to about \$2,000,000, employing 1,973 workmen.

Hardware, cutlery, &c.—Value of articles manufactured \$786,982; men employed 770.

Cannon and small arms.—Number of cannon cast 5; number of small arms made 21,571.

Precious metals.—The value of articles manufactured from the precious metals is estimated at \$2,679,075; and from various other metals \$1,260,170; workmen employed in these branches about 900.

Furniture.—Value manufactured \$1,155,692; men employed 2,373; capital invested \$716,707.

Salt.—Bushels produced 549,478; men employed 265; capital invested \$191,435.

Bricks and lime.—The value of these articles produced is estimated at \$1,733,590; but probably greatly exceeds that amount, as large quantities of lime are burned by the farmers of which no account was taken. Men employed 3,888.

Stone, marble, &c.—Value manufactured \$443,610; men employed 536.

Houses.—The number of brick and stone houses annually built is estimated at about 2,000; of wooden houses 2,428; men employed in building 9,974; value of constructing \$5,354,480.

Other manufactures.—Of manufactures not enumerated in the foregoing list, the estimated value in the census returns is \$3,204,403; capital invested \$2,083,398.

The total amount of capital invested in manufactures in Pennsylvania is returned at \$31,815,105.

III. *Productions of the Mine.*

In mineral wealth Pennsylvania stands pre-eminent and unrivalled among her sister States. The incalculable amount, the extensive variety and the superior quality of the coal, iron ore, and limestone found within our borders, constitute an inexhaustible source of wealth and prosperity to the people of this State; forming, as they are developed and brought into productive usefulness, a sure basis and permanent supply for the employment of industry in the manufacturing, commercial and agricultural interests of the Commonwealth.

It is, perhaps, fortunate for Pennsylvania, that no available mines of the precious metals have as yet been discovered in the State. If we are to judge from the past history and present condition of those countries which have been most productive in gold and silver, we must conclude that the wealth produced by an abundant supply of these metals is by no means favourable to national prosperity. The true source of national wealth consists in the active industry of the great mass of the people; not in the creation of enormous fortunes for a few individuals from their mines, by the mere labour of digging and refining. A pound of gold or silver, as produced from the ore, has nearly its maximum value with but little labour, and consequently yields employment to but a few persons; while a pound of iron, in its various changes from the ore through the furnace, bloomery, forge, rolling-mill, steel manufactory, and then into fine cutlery, watch springs, and the thousand other delicate and useful articles made from it, employs hundreds of men, and is increased by their labour in value almost equal to its weight in gold. It thus furnishes innumerable workmen with employment, and yields food and clothing for themselves and their families; while the pound of gold or silver, after being dug by the miner and separated from the ore, passes into the coffers of the proprietor of the mine, and adds nothing more to the productive industry of the country.

Spain and Portugal afford instructive examples of the effect of an abundant supply of the precious metals. The Mexican and South American possessions of these nations yielded them gold,

silver and diamonds, which increased their wealth without a corresponding increase of national industry. Luxury, extravagance, pride and idleness followed as the invariable consequences of sudden affluence. Enterprise languished, agriculture and manufactures were neglected, their wealth was squandered in luxurious ostentation and idle show, while the mass of the people, on the decline of national energy, sank into idleness, apathy and poverty.

As an example of the effect of an abundant supply of coal and iron in promoting national wealth and power, let us turn to Great Britain. Coal is the food and iron is the muscle of her vast manufacturing industry. Her coal supplies the fires of thousands of steam-engines, which spin, weave, grind, hammer, blow, pump, lift, travel the railroads and navigate the rivers and seas; it supplies also the necessary fuel for her countless furnaces, rolling-mills, forges, smitheries, and other operations in iron and steel, as well as the fires of her vast workshops in other branches of arts and manufactures. Her iron supplies not only the material for her own enormous consumption in rail roads, architecture, machinery, ship building, agricultural implements, tools, cutlery, &c., but affords a surplus which in various stages of preparation or finished manufacture is exported to other countries. It will thus be seen that these two mineral productions of Great Britain afford, in all the industrial operations of manufactures and trade dependent upon them, employment and support for millions of her population; and how greatly the productive industry thus called into action by these two important staple productions has added to the wealth, power and prosperity of this great nation.

In order to produce a like effect from the coal and iron of Pennsylvania, nothing is requisite but a proper encouragement of our own manufactures, the judicious employment of the needful capital, and a perseverance in domestic industry. Several varieties of our iron ore are greatly superior in quality to much of that which is generally worked in Great Britain; our coal is fully as good as hers, and of inexhaustible extent. Our territory is nearly as large as that of England alone, and our capacities of agriculture and manufactures, with proper encouragement and attention, would not be found inferior. Pennsylvania has less than two millions of inhabitants, while England supports thirteen millions; the extent and variety of her manufactures not only sustaining her redundant population, but at the same time affording a market for her agricultural productions.

In the present infant state of the mining operations and coal trade of Pennsylvania, it is hardly possible to predict, or even to imagine what may be its future extent and importance. Coal is becoming the general fuel in our Atlantic cities, and many of the large towns and villages, not only for household use, but for steam engines, manufactories and various other purposes, and will finally become the common fuel for most operations in which artificial heat is required.

Anthracite coal. The anthracite of Pennsylvania may be considered as existing in three separate coal fields, having the same

geological character, and being separated from each other by anti-clinal axes or lines of elevation which bring up between them the rocks below the coal. Some of these fields are in like manner divided into a series of minor basins, by a similar, though not so extensive an elevation of the lower rocks. The coal basins have been already described as long canoe-shaped troughs, containing the beds of coal interstratified with slates, shales and sandstones of various thickness, which generally dip in a direction towards the middle of the basins, and are found with almost every degree of inclination from nearly horizontal to perpendicular.

The beds of coal vary in thickness from one to twenty or thirty feet; some have been found measuring fifty or sixty. They are exposed above the water level in innumerable places by deep ravines, abrupt precipices, and the channels of streams in their passage between the hills. Beds from five to ten or twelve feet thick are generally preferred for working, as they can be more readily and profitably mined than those of greater thickness. In beds of this size the roof can be supported by props and all the coal taken out, while those of twenty or thirty feet must be worked in chambers, and large pillars of coal left to support the roof or superincumbent mass.

The usual mode of mining is by running a tunnel or drift into the hill, above the water level, either upon the coal bed or until it is reached. This drift is of sufficient size to admit the passage of rail road cars, and at the same time serves as a drain for the water of the mine. The breast of coal lying above this drift is then pursued by the miners to the summit or out crop, working out the coal as they proceed, and throwing it behind them or sliding it down to the drift, where it is loaded upon cars and drawn to the mouth of the mine, from which it is conveyed to the landings where the canal boats are loaded. Several beds of coal are frequently found in the same hill, sometimes separated but by a few feet of slate or sandstone; others are several hundred feet apart. When that portion of the bed which lies above the drift has been exhausted, the process of working below water level must be commenced, and steam engines employed to raise the coal and water from the mine. The extent of the beds in their downward slope has not been ascertained, and ages will probably elapse before the workings will have reached a depth sufficient to determine this question.

The southern coal field may be considered as divided into four mining districts: the *Lehigh*, the *Schuylkill*, the *Swtara*, and the *Susquehanna*, which are separated from each other by the summits that divide the waters of these several streams.

The Lehigh district is at the eastern extremity of this coal field, immediately north of the Sharp mountain, and is owned by the Lehigh Coal and Navigation Company. The summit mines are on the top of a high ridge, about nine miles from the river at the Mauch Chunk landing. Here is an immense mass of coal, about sixty feet thick, lying in nearly a horizontal position, which appears to be composed by the union of several coal strata, with

small intervening bands of slate. At this place mining operations have been extensively carried on for several years. The coal is uncovered by removing the superincumbent mass of earth and loose stones, which is from ten to twenty feet thick, and is then quarried out by the light of day; while in most other mines tunnels are worked under ground into the hills, and the miner pursues his labour lighted by a solitary lamp, which glimmers but feebly in the profound and murky darkness of these subterranean excavations.

At Rhume Run, north of the summit mines, a number of beds of coal have been opened, from five to nearly thirty feet thick, making a total thickness of more than one hundred feet of coal. Rail roads are laid from these and from the summit mines to the river near Mauch Chunk, and the coal is sent down the company's navigation to the Delaware canal at Easton, whence it finds its way to market at Philadelphia, New York, and other places.

The Schuylkill district is extensive, and comprises that portion of the southern coal field which lies on the various branches of the Schuylkill, between the waters of the Lehigh and Swatara. It includes the Tamaqua, Little Schuylkill, Pottsville, Mine Hill, and other local subdivisions, all of which send their coal on the various rail roads and branches that extend in different directions from the mines to the river, where they communicate with the Schuylkill navigation, or with the Philadelphia, Reading and Pottsville rail road. In this district are a few companies which have mining privileges; but most of the operations are conducted by individual enterprise, for which the field is fairly open. Many beds are extensively worked, yielding coal of different qualities; some being hard, compact, and leaving white ashes after combustion; another variety softer, igniting and burning more freely, which leaves red ashes; and some intermediate kinds commonly called gray ash coal.

The Swatara district lies on the waters of that stream, west of the Schuylkill, and the coal mined here is sent from the neighbourhood of Pine Grove down the improvements of the Union Canal Company to the Susquehanna canal at Middletown, or eastward towards the Schuylkill. The coal produced in this district is generally less compact, lighter, softer, and burns more freely than that from the same field farther eastward. The Sharp, Red, Coal, Little Lick, and Big Lick mountains contain beds from three to thirty feet in thickness, and being broken by the passage of many streams through them, afford great facilities for mining operations.

The Susquehanna district includes the two points or western terminations of the southern coal field, which branches out towards the Susquehanna into two divisions. The southern of these, commonly called the Stony creek coal region, has been sufficiently examined to ascertain the existence of valuable beds of coal, some of which appears to possess a semi-bituminous character; but from the want of facilities for transportation to the river, no mining operations of consequence have been undertaken in this region. The northern division, lying between Williams'

and Lykens' valleys, commonly called the Bear Valley coal region, communicates with the river Susquehanna by a rail road from Bear Gap to Millersburg. The mines of the Lykens' valley company at Bear Gap have been worked for several years, and produce a soft, free-burning coal of good quality. Numerous beds of coal exist here, and but a few of them have yet been opened. At Klinger's Gap, on the north side of Bear Valley, many fine beds are exposed, several of which have been opened and preparations made for working them as soon as a means of conveyance to the river shall be afforded.

The middle coal field, which is composed of several minor basins, lies north of the Broad mountain, and includes the Beaver meadow and Hazelton mining district at its eastern end, the Mahanoy near the middle, and the Shamokin towards its western extremity. The coal of this region differs but little from that of the southern coal field either in character or quality; some of the beds producing white and others red ashes. The same change is noticed in the character of coal as we proceed westward, which has been mentioned as occurring in the southern field. Thus at Hazelton and Beaver meadow we have a hard, shining, compact coal, of conchoidal fracture, consuming slowly and yielding an intense heat; while at Shamokin we find it more brittle, lighter, less compact and of much more ready combustion. Except at the points mentioned, but little has yet been done towards developing the immense coal deposits of this field; and it can only be when the extension of rail roads into the various portions of this wild and mountainous region shall afford the means of conveying its hidden treasures to a market, that they will become fully known and appreciated.

The Beaver meadow, Hazelton and other mines in the same neighbourhood are worked by incorporated companies, who send their coal by rail roads to the Lehigh navigation, and thence to the Delaware canal. In the Mahanoy district, mines are opened near the Pottsville and Danville rail road, in the vicinity of Girardville, from which the coal can be sent to the Schuylkill at Pottsville; or when this rail road shall be completed it may be sent westward to the Susquehanna. At Shamokin, near the present termination of the western section of the Pottsville and Danville rail road, a number of mines are in operation, yielding various qualities of coal, the product of which is sent by that road to Sunbury, and thence down the Susquehanna canal to the towns along the river, or to Baltimore.

The northern, or Wyoming and Lackawana coal field, is of nearly equal extent with each of the others, being about sixty-five miles in length and from one to five or six in breadth. Like the others it contains numerous beds of coal from one to thirty feet in thickness, which are exposed in many places by the deep channels and ravines among the hills. Mining operations in this region are mostly carried on by individual enterprise. Below Wilkesbarre, in the neighbourhood of Nanticoke, and in Plymouth, several productive mines are worked near the river, as well as others in the

vicinity of Wilkesbarre. The mine of the Baltimore company is about three miles above Wilkesbarre, where a solid bed of coal about 24 feet thick is opened; and which in other places in the valley is said to be found 32 feet. This field extends up the valley of the Lackawana to Carbondale, at which place are the mines belonging to the Hudson and Delaware canal company, who send their coal by their own rail road and canal to Rondout on the Hudson river, and thence to New York, Albany, and other places. This company transport no coal upon their improvements except that mined by themselves, and consequently prevent individuals from operating in this neighbourhood.

The soil of the northern coal field presents a striking contrast with that of the middle and southern, being generally a beautiful and fertile valley, and forming a highly productive agricultural region; while the others present a thin, barren, sterile soil, only small portions of which are susceptible of cultivation. In the favoured valley of Wyoming, the same acre of land may furnish employment for both the agriculturist and the miner. While one is occupied upon the surface in ploughing the soil or reaping the grain, the other may be engaged far beneath in mining and bringing forth the hidden treasures of the earth, stored away for countless ages and intended for the future use and convenience of man.

These three great deposits of anthracite coal have been calculated to contain about 975 square miles, or 624,000 acres. It is estimated that each cubic yard of coal in the ground yields a ton when mined, so that a horizontal stratum of coal but three feet thick, extending over a space of one acre, would afford 4,840 tons, and proportionably more according to the steepness of the dip or inclination. Now when we consider the great number of coal beds each lying over the other, and that some of them reach the enormous thickness of fifty or sixty feet, we can scarcely bring the mind to conceive, much less to calculate the vast quantity of this most valuable and indispensable article, which is so justly the pride and boast of Pennsylvania; nor how much it must in future years add to the wealth and importance of our State.

With a view of showing the present value of our coal trade, yet in its infancy, we shall annex the quantity produced from each of the mining districts in 1841 and 1842, amounting to more than a million tons of anthracite in each year, of which about 800,000 tons are annually exported to other States.

	1841.	1842.
Lehigh, Beaver Meadow, &c.	142,821 tons.	272,126 tons.
Schuylkill,	584,692 "	540,892 "
Swatara,	17,653 "	32,381 "
Lyken's Valley,	4,379 "	4,864 "
Shamokin,	21,463 "	10,000 "
Wyoming,	53,315 "	47,346 "
Lackawana,	192,270 "	205,253 "
Total,	1,016,593 "	1,112,862 "

In 1820 only 365 tons of anthracite coal were sent to market. In

1830 the quantity had reached 174,737 tons : and in 1840, 865,414 tons.

Bituminous coal. The bituminous coal region of Pennsylvania lies principally west of the Allegheny mountain, and though occupying the same geological situation in the series of rock formations as the anthracite, differs from it not only in quality, but in the position of its beds. These, instead of dipping like the anthracite strata, at every angle of inclination, according to the disturbed position of the accompanying rock strata, are found extending through the hills in nearly horizontal planes, or with occasional gentle rolls or undulations. Those irregularities called by the miners *faults* and *troubles* are seldom met with, and the bituminous coal beds, together with the rocks in which they are contained, are found in a position which shows that they have not been subject to those mighty convulsions which have so disturbed the anthracite region.

In the bituminous coal field there appear to be not less than ten separate layers or beds of coal of sufficient capacity for mining, and which vary in thickness from three to ten feet. The same bed is not, however, of uniform dimensions wherever found, and, in its range over a wide extent of country, may prove to have increased or diminished materially in thickness at different places where it is opened. Neither is the perpendicular distance of the coal seams from each other always the same, the rock strata between them being also subject to similar variations in thickness.

The area of the bituminous coal region in Pennsylvania has been estimated at 21,000 square miles, or 13,440,000 acres. This, however, is probably much beyond the real area containing coal, for it should be recollected that in a portion of this territory, even the lowest coal beds have been swept from the valleys and are only found in the elevated grounds. But throughout this vast range of country coal is mined to a greater or less extent, and is almost universally used for fuel and manufacturing purposes; and being almost literally found at every man's door it is preferred to wood, even in those parts of the country where timber is so abundant as to cost nothing but the trouble of cutting. Being thus freely used by the whole population of the region where it abounds, for almost every purpose requiring artificial heat, it is impossible to form a correct estimate of the quantity annually consumed. Its great abundance and cheapness have given rise to the vast and widely extended manufacturing establishments of the west, where enterprise and industry flourish in the smoky atmosphere produced by the thousands of fires which it feeds.

It has been computed that in the city of Pittsburg and its suburbs nearly eight millions of bushels, or 260,000 tons of coal, are annually consumed. Vast quantities are also used in the salt works on the Allegheny, Kiskiminetas, Conemaugh and other streams, amounting probably to not less than five millions of bushels. If in addition to these we consider the quantity used in furnaces, rolling mills, and other manufacturing establishments in different places, that consumed in steamboats and stationary en-

gines, together with the vast consumption for domestic and household purposes, as well as that sent to other States, we may probably safely estimate the quantity of bituminous coal mined annually in Pennsylvania at two millions of tons. About nine tenths of this amount is consumed within the State, and near 200,000 tons shipped down the Ohio.

The increase in the consumption of this coal must in future years be very great, from the multiplication of furnaces, iron works, steam engines and large manufacturing establishments, as well as the natural increase of the population. The diminution of wood on the western waters must before long render coal the common fuel for steam engines on the Ohio and Mississippi, and for the same reason the consumption of coal in the towns along these rivers must at no distant day be very great. The quantity already used in Cincinnati alone is estimated at two millions of bushels, or about 70,000 tons annually, which is principally supplied from the beds on the Monongahela and Youghiogeny in Pennsylvania, and from the neighbourhood of Wheeling.

Iron Ores.—The iron ores of Pennsylvania are extensively diffused throughout the State, and consist of several varieties, of which we shall briefly describe some of those most commonly used. The proportions of metallic iron mentioned as being contained in them are those yielded by chemical analysis, and somewhat exceed the quantity actually produced by the furnace. This is owing probably to the specimens analyzed having been rather purer than the general mass yielded from the mine, and also partly to the superiority of the laboratory over the furnace in effecting a complete separation of the iron from its attendant impurities in the ore.

1. The *magnetic oxide of iron* is found chiefly in the primary rocks of the South mountain, between the Delaware and the Susquehanna, or near some of the trap dikes in the south-eastern part of the State. The colour of this ore is usually a dull iron black; it is very heavy; its structure imperfectly crystallized, granular, or laminated; lustre metallic; and commonly possesses magnetic polarity. It yields from 60 to 70 per cent. of metallic iron.

2. The *brown and yellowish argillaceous, or hematite and pipe ores*, which occur principally in and along the borders of most of the limestone valleys in the State, are abundant and extensively worked. The colour of this ore is usually a reddish or yellowish brown; its structure various, being compact, cellular, laminated, fibrous or stalactitic, and its cavities commonly filled with yellow ochreous or clayey matter. When the different varieties of this ore are analyzed, they are found to contain from 45 to 60 per cent. of metallic iron.

3. The *fossiliferous ore* from the variegated shale formation (V.) is found near Danville in Columbia county, and also at various places in Union, Juniata, Huntingdon, Bedford, and other counties where that formation extends. This ore, though easily recognized by a practised eye, is somewhat variable in its appearance and external character. The softer varieties have a dull brown colour, an open, porous or cellular structure, usually break into

irregular rhomboidal masses, and frequently contain scales of micaceous oxide of iron, with the impressions and casts of shells and other fossil remains. When rubbed with a pointed piece of metal or other hard substance, a mark or streak is left upon the ore of a rich deep-red or purplish colour. The harder varieties have usually a red colour, are compact in texture, calcareous or silicious, also contain fossils, and have altogether a more compact and massive character than the soft variety. As a general rule the soft and porous kinds of this ore are found nearest the surface, where they have been most exposed to the decomposing action of atmospheric agents; while that from greater depths is commonly more compact, contains a larger proportion of carbonate of lime in its composition, and works less easily in the furnace than the soft ore. The proportion of metallic iron contained in different varieties of this ore is from 40 to 60 per cent.

4. The *iron ores of the coal regions* are usually found in nodular concretions and kidney-shaped masses in the slates and shales accompanying the coal seams, or often in flat bands and layers between the slates. Ore is found both in the anthracite and bituminous regions, and varies in character and quality according to its local position or other circumstances. It is usually in the state of an *argillaceous proto-carbonate of iron*, though much of that which lies on or near the surface has become so much oxidized as greatly to change its external character. When found in its original position, in the solid beds of slate, this ore is generally in hard compact rounded masses, with a close fine-grained texture, though sometimes appearing arenaceous, granular, or sub-oolitic; colour dark slate blue or grayish. After having been for some time exposed to the atmosphere, these masses show a tendency to separate into concentric layers, the colour changes to reddish or yellowish brown by the process of oxidation, and the whole external character becomes so much altered by long exposure that many of the specimens found in the surface soil resemble the brown argillaceous ore on the borders of the limestone valleys. The ore of our coal region is of the same character as the "clay iron stone" which is so largely used in the manufacture of iron in England and Wales; and superior in quality to much of that which is smelted in those countries. It yields from 30 to 50 per cent. of metallic iron, and from its general dissemination throughout that part of the State where the other ores are not found, is becoming highly useful and important.

5. *Bog ore*, which generally occurs in beds of limited extent and of inconsiderable depth, is found, less or more, in almost every county in the State. These beds have mostly been deposited by springs and small streams, the waters of which, passing through a ferruginous soil, have carried away a portion of the iron, which on exposure to the air becomes oxidized and is slowly deposited on the low grounds over which the water has flowed. But few of these deposits are worth working; not being in general sufficiently extensive to warrant the erection of furnaces in their vicinity, they are only useful as auxiliary to other ores. Bog ore is externally

of a yellow or reddish brown colour; structure open, porous or cellular; brittle, friable or earthy; and frequently contains roots and vegetable fibres from trees and plants growing in or near it. Good varieties of this ore yield from 40 to 55 per cent. of metallic iron.

The quantity of iron ore annually mined and smelted in Pennsylvania may be ascertained with tolerable accuracy. According to returns made by the County Commissioners to the Secretary of the commonwealth in 1839, there were mined in the 699 townships which made returns, 334,151 tons. Only part of the townships in Berks, York and other counties made reports, while several counties known to be productive in iron ore, such as Northampton, Lebanon, Mifflin, Juniata, Westmoreland, Venango, Fayette, &c., made no returns. If, therefore, we assume for the remaining 361 townships, the same ratio of production as those reported, we shall have as follows:

Quantity of iron ore mined in 699 townships,	334,151 tons.
“ estimated for the remaining 361 townships,	172,573 “
Total mined annually in the State,	506,724 “

The accuracy of this statement is corroborated by the report of a committee to the Home Industry Convention, held at Harrisburg in 1842. This committee, which was appointed for the purpose of obtaining statistic information relative to the iron interest of Pennsylvania, state that in the 213 furnaces in Pennsylvania there are annually produced 190,000 tons of iron. Now if we estimate the average yield of ore in the furnace at $37\frac{1}{2}$ per cent., which is allowing $2\frac{1}{2}$ tons of ore to make a ton of metal, we shall find that to produce these 190,000 tons of iron will require an annual consumption of 506,666 tons of ore, which is within 58 tons of the quantity stated above, as actually mined in the State in 1839.

Marble and Limestone.—Marble of several kinds and different varieties of colour is found in various parts of the State, but it has not been quarried to much extent except in Montgomery and Chester counties. In the neighbourhood of Downingtown a superior white marble is produced, of which large quantities have been conveyed to Philadelphia, and employed in the construction of many public and private edifices. East of the Schuylkill, below Norristown, are several extensive quarries which yield marble of various shades of colour, white, dark blue, and variegated; from which the city has been supplied with a vast amount of material, not only for building, but for many of the ornamental purposes for which this stone is used. The variegated breccia, commonly called Potomac marble, is found in many places along the northern and southern margins of the red shale formation which crosses several of the south-eastern counties, particularly where this red shale borders on a limestone. This rock, when susceptible of a fine polish, forms a beautiful material for ornamental work; but has not yet been brought into use to any considerable extent.

It is scarcely possible to form an estimate of the incalculable advantages derived by Pennsylvania from the limestones so extensively diffused throughout the State. They impart fertility to the soil wherever found; they are used as a building stone for houses, barns, bridges, canal locks, &c., and they constitute an indispensable article of use in our furnaces for smelting iron ores. When burned into lime they yield a necessary ingredient in the mortar for stone-masons and bricklayers, for whitewashing, and for several purposes in manufactures and the arts. But it is from the benefits derived to our agriculture from the use of lime as a manure for the soil, that our State is destined to be most enriched by this important article of her productions. In those districts where its value as a manure has been tested by experience and is properly understood, the intelligent farmer needs no argument to convince him that a quarry of good limestone on the border or within reach of a region where the soil is thin and unproductive, is of much more value to him than a mine of lead or silver, because the expense of working it is trifling and the product sure. At several points on our canals and rail roads, vast quantities of limestone are quarried and transported to places where it is required for use; and from the rapidly increasing demand it is becoming a considerable item in the tolls upon our public works.

Slate. This material is found in a number of places, sufficiently fissile and of such quality as to afford a good article for the manufacture of roofing slates. In the range of slate-hills which crosses the Susquehanna from Lancaster into York county, it occurs abundantly near Peach Bottom, where quarries have been worked on both sides of the river. The largest amount is, however, now produced at the works about three miles west of Peach Bottom.

Extensive quarries are also opened at several places in the slate formation which stretches along the south-eastern side of the Blue Mountain. At the works below the Delaware Water Gap, in Northampton county, an excellent roofing slate is produced, and school slates of superior material and workmanship are manufactured to a considerable amount. Slate quarries are also worked near Nazareth, and on the west side of the Lehigh above Allentown.

In addition to the valuable mineral products already mentioned, a rock yielding excellent hydraulic cement is found abundantly in the neighbourhood of several of our limestone formations, and has been used in the construction of canal locks and for other purposes where this article is required. Brick and potters' clay of good quality occur in almost every part of the State; and accompanying many of our coal beds is that variety of clay shale from which fire bricks are made. Connected with the primary rocks in the south-eastern part of the State, are serpentine and soap stone, accompanied by chrome and magnesia. From the southern part of Lancaster county the last mentioned materials have been obtained for use in the manufactories of paints and Epsom salts in Baltimore.

Ores of copper, zinc, and lead have been discovered in various

places within the State, but have not yet been found to exist in sufficient quantity to render the working of them an object of profit.

IV. *Productions of the Forest.*

About two thirds of the surface of Pennsylvania is yet covered with timber, and though our primitive forests, except in some of the less inhabited parts of the State, have been thinned by the woodman's axe, enough still remains to render our woodland products valuable and important for many future years. On the rocky, but tree-clad mountain, in the dark and unfrequented pine swamp, and through the wild and wide forest ranges in the interior counties, are immense masses of timber which will long resist the slow but sure process of destruction to which our forests seem to be doomed.

The productions of our timber lands are numerous and important. They yield an incalculable amount of fuel for domestic and manufacturing purposes, including the charcoal used for making and manufacturing iron in our furnaces, forges, foundries, and smith-shops; they supply our saw-mills with the logs which are sawed into boards, and other lumber for buildings, cabinet-makers, and various other mechanical purposes; they furnish the tougher and stronger kinds of wood from which our farming utensils are made, as well as the vast amount required for fences in our agricultural districts. The quantity used in ship and boat building is considerable; staves and shingles are manufactured to a large amount annually,—and of all the multiplied uses to which wood is applied, but few can be named which may not be supplied from the forests of Pennsylvania.

The timber most in demand for boards and shingles is white pine, which is still abundant in some of the northern counties, and forms a valuable portion of their products, being floated down the Delaware, Susquehanna and Allegheny rivers to a market. Spruce or hemlock is sawed into lumber for buildings and fences; yellow or pitch pine and oak, for purposes requiring greater strength and durability. Cherry is used chiefly for cabinet work, maple and poplar for bedsteads, chair-makers, and various other purposes. Chesnut is much valued for fences, and locust for posts and other uses where a less durable wood would be subject to speedy decay. White-oak and hickory, being strong and tough, are used by wheelwrights in the manufacture of wagons and farming implements; other kinds of oak are made into staves;—and it may be said that scarcely a tree grows in our woods which is not adapted to some useful purpose.

Of the annual value of our forest productions it is not easy to form a correct estimate. There are in the State 5,389 saw mills, producing about 400,000,000 of feet of lumber; and the value of the unsawed timber, shingles and staves sent to market, is probably not less than \$500,000. To this is to be added the amount required for home consumption, as well as the value of the timber used for other purposes, of which no calculation can be made.

In addition to the timber which our forests afford, they yield us annually more than two millions of pounds of maple sugar, about 2,000 barrels of tar, pitch, turpentine and rosin, and nearly 300 tons of pot and pearl ashes.

Under what four general divisions may the productions of Pennsylvania be considered? Why are the census returns supposed to be generally less than the real amount? For what branch of domestic industry is this State distinguished? What are the characteristics of Pennsylvania agriculture? Describe the system of crops generally pursued. What kinds of grain are chiefly produced? Mention some of the other agricultural productions. What is said of the various modes of culture in different parts of the State? What kinds of fruit are produced? What is said of the general condition of the farmers of Pennsylvania?—Of their buildings?—Of the horses? What other animals are used for labour? What is said of the stock of cattle?—Of the sheep?—Of the swine? Can you tell the number of each description of live stock in Pennsylvania? The amount of each kind of agricultural product named?

Which is the most important production of our manufactures? What is said about the indispensable utility of iron? In which counties is it most abundantly produced? How many furnaces are in the State, and what is the quantity of iron manufactured? How many forges, rolling mills, &c., and what is the amount of their produce? What is the capital invested, and how many persons are employed and supported by the iron works? How many mills of each kind, and what is the value of their productions? *(Similar questions may be asked respecting each branch of manufactures.)*

What is said of the mineral wealth of Pennsylvania? Why are mines of coal and iron considered of more value to a country than those of the precious metals? What nations are mentioned as examples of the truth of this opinion? What has been the effect of an abundant supply of coal and iron in Great Britain? What is said of our advantages in this respect, compared with that country? Describe the situation of the anthracite coal of our State. What is the thickness of the beds of coal, and how are they exposed? Describe the usual mode of mining coal. Into what mining districts is the southern coal field divided? Describe the mines of the Lehigh district. What subdivisions of the Schuylkill district are mentioned? What is said of the mining operations in them, and of the varieties of coal produced? Where is the Swatara district, and by what route is its coal sent to market? What is said of its mines, and of the quality of the coal? Mention the two divisions of the Susquehanna district, and the places where mines are worked. How is the middle coal field situated, and what mining districts are in it? What is said of the difference in the quality of its coal? By what route is the Beaver Meadow and Hazelton coal sent to market?—Also that from the Mahanoy and Shamokin mines? What is the extent of the Wyoming and Lackawana coal field compared with each of the others? What is said of its beds of coal, and at what places mined? By what route is the coal at Carbondale sent to market? How does the soil of this coal field compare with that of the others? What is the extent of our anthracite coal deposits, and what is said of the quantity contained in them? What amount of anthracite was produced in each of the years 1841 and 1842, and how much in each mining district? What was the amount in each of the years 1820, '30, and '40? In what part of the State is most of the bituminous coal found? In what particulars of situation does it differ from the anthracite? What is said of the number of its beds, their thickness, &c.? What is the supposed area of the bituminous coal region in Pennsylvania? What is said of the general use of coal over this extent of country? What has resulted from the abundance of coal in the western part of the State? At what places is it largely used for manufacturing purposes? What quantity is supposed to be annually consumed, and how much mined? What is said of the probable increase in its consumption?

Mention the varieties of iron ore most common in Pennsylvania. Where is the magnetic ore found, and what are its properties? The brown argillaceous or hematite ore? The fossiliferous ore, and what is said of its several varieties? In what situations do the iron ores of the coal formations occur? What is said of their character and quality? How does bog ore occur, and what is said of it? What is the total estimated amount of iron ore annually mined in the State? What is the estimated average yield of ore in the furnace, and what is the annual product of iron?

In which of the counties is most of our marble obtained? Near what places are there extensive quarries, and what kinds are produced? In what part of the State is the "Potomac marble" found? What is said of the general benefits derived from limestone? To what purposes is it applied? Which of these is considered most important to the wealth of the State?

In what places is roofing slate quarried for use? What is said of hydraulic cement or water lime? Of useful kinds of clay? What other valuable minerals are mentioned?

What is said of the quantity of timber in Pennsylvania? Mention the useful purposes supplied by our forest productions. What several kinds of timber are spoken of as most important, and to what uses applied? What is the estimated amount of lumber annually produced? Mention some other valuable productions of our forests.

18. TRADE AND COMMERCE.*

COMMERCE is usually considered under two heads, the foreign and home trades; but inasmuch as Pennsylvania is one of a confederacy of States, each exercising almost unlimited sovereignty within its own borders, and yet all, in their relation to foreign states, to be considered as a unit, the subject may more properly be presented in three divisions; first the *foreign* trade, or interchange of commodities with foreign nations; secondly the *domestic* trade, or interchange with the other states of the Union; and thirdly the *internal* trade, or that between different sections of the State.

THE FOREIGN TRADE.†—Of the early history of the foreign trade of Pennsylvania, we have but little authentic information. We have every reason, however, to believe that its extent was very limited, until after the establishment of Penn's colony in 1682.

Prior to Penn's embarkation for America he disposed of 20,000 acres of land to an association, entitled the Free Society of Traders of Pennsylvania, which was formed in England and confirmed by patent, for the avowed purpose of promoting the interests not only of the stockholders of the company, but of all concerned in the trade of the colony. This company attempted to establish various manufactures and other industrial pursuits in the province. In a letter from Penn to the committee of the society, residing in London, dated "Philadelphia 16th of 6th mo., called August," we find mention made of a tannery, a saw-mill, and a glass house, a whalery, and a dock, as belonging to it; and also that Penn advised them to attempt the culture of the vine for wine, and the manufacture of linen. These attempts to introduce the culture of the vine, the manufacture of glass and

* Works consulted in the preparation of this article.—Colonial Records of Pennsylvania, Proud's History of Pennsylvania, Gordon's History of Pennsylvania, Hazard's Register of Pennsylvania, Reports of the Secretary of the Treasury on the Commerce and Navigation of the United States, Seybert's Statistical Annals of the United States, Pitkin's Commerce of the United States, Hazard's Commercial and Statistical Register, Whitworth's State of Trade, Holmes' American Annals, Life and Writings of B. Franklin, Harris' Pittsburgh Directory, and the Commercial List and Philadelphia Price Current.

† As the British North American colonies were entirely independent of each other until after the severance of their connexion with the mother country, the trade of Pennsylvania with the others, prior to 1776, is properly included in the foreign trade.

linen, and the whale fishery amongst the colonists, did not prove successful; of the further operations of the company we know little or nothing.

In the first year of the establishment of the colony, 26 ships arrived with passengers and emigrants, and 40 trading vessels great and small. These latter were, no doubt, laden with provisions, furniture, and stores of various kinds for the colonists, and took little if any export cargo. In the next two years 24 more ships arrived with emigrants. For the first few years the attention of the settlers was, necessarily, very much engrossed by the clearing of land and the culture of grain, for the consumption of the colony; but "trade and commerce, in which the Quakers were known to excel," soon claimed their notice. A trade was opened with the Indians, for furs and skins; and the culture of tobacco was carried on so extensively that in one year (1688-9,) there were exported 14 cargoes of the weed. In this branch of agriculture, however, Virginia and Maryland were found too powerful rivals; and it was soon abandoned for the culture of wheat, barley, oats, rye, &c., and the grazing of cattle and cutting of timber: the exports of the province undergoing a corresponding change.

The war between England and France, commencing in 1688 and terminating in 1697, operated injuriously on the interests of the colony. About the latter end of this period we find allusion made to the *poverty* of the province, and to the impediments to its commerce, consequent upon the war; and it is stated that "in Philadelphia even, pieces of tin and lead were current for small change."

The course of trade, from this early period until the separation of the province from the British empire, appears to have undergone but little change, although extended in its range. The exports, consisting of grain, salt provisions, pipe staves, &c., and at a later date including flour, bread, flaxseed, iron, &c., were not wanted in England, at that time a great grain-exporting country; but found a market in the neighbouring provinces and the West Indies; and subsequently also in Portugal, Spain, several European and African ports in the Mediterranean, and the various groups of islands in the North Atlantic adjacent to Africa. The returns from these various branches of foreign trade, excepting a small portion required for the consumption of the province and its trade with the Indians, were all carried to England; or the produce received was sold in other foreign countries and the proceeds remitted to England, where all the available funds of the province were required to pay for the manufactures imported thence, which, from the restrictions imposed by parliament on manufacturing in the colonies, were to a very great amount, embracing almost every article of clothing, and household utensils even of the most simple and common kinds.

The following table exhibits the vast excess of imports over exports, in the trade of the province with Great Britain, from 1697 to the commencement of the war of Independence, and also shows the effect of war and other operative causes, on the amount of importations.

During the war between Great Britain on the one part and France and Spain on the other, which continued from 1702 to 1713, the commerce of the province was exposed to repeated depredations by privateers. In 1707-8 the captures of vessels off the capes of the Delaware were so frequent as almost wholly to interrupt the trade, which had in addition, about this period, to bear the exaction of dues for the privilege of navigating the Delaware, levied by order of Governor Evans, at a fort erected at New Castle.

The war between Great Britain and Spain, in 1717 and '18, does not appear to have materially affected the colony.

The year 1722 was one of great commercial embarrassment in the province. The importations appear to have been too great, the country was drained of specie for remittance to England, and there was consequently a deficiency in the circulating medium. The payment of debts was procrastinated, lawsuits multiplied, produce was made a legal tender in payment of debts, executions for debt were stayed, the rate of interest was reduced from 8 to 6 per cent. and the value of coin was raised 25 per cent. These measures naturally tended to destroy confidence in the results of all

trading operations; but did not, as was intended, prevent the exportation of specie.

Trade of Pennsylvania with Great Britain, from 1697 to 1776, inclusive.

Year.	Exports to G. Britain.	Imports.	Year.	Exports to G. Britain.	Imports.	Year.	Exports to G. Britain.	Imports.
1697	* sterling. 3,347	£ sterling. 2,997	1724	£ sterling. 4,057	£ sterling. 30,324	1751	£ sterling. 23,870	£ sterling. 190,917
1698	2,720	10,704	1725	11,981	42,299	1752	29,978	201,666
1699	1,477	17,064	1726	5,960	37,634	1753	38,527	245,644
1700	4,608	18,529	1727	12,823	31,979	1754	30,649	244,647
1701	5,220	12,003	1728	15,239	37,478	1755	32,336	144,456
1702	4,145	9,342	1729	7,434	29,798	1756	20,095	200,169
1703	5,160	9,899	1730	10,382	46,592	1757	14,190	168,426
1704	2,430	11,819	1731	12,786	44,960	1758	21,383	260,953
1705	1,309	7,206	1732	8,524	41,698	1759	22,404	498,161
1706	4,210	11,037	1733	14,776	40,565	1760	22,754	707,998
1707	786	14,365	1734	20,217	54,392	1761	39,170	204,067
1708	2,120	6,722	1735	21,919	48,804	1762	38,091	206,199
1709	617	5,881	1736	20,786	61,513	1763	38,228	284,152
1710	1,277	8,594	1737	15,198	56,690	1764	36,258	435,191
1711	38	19,408	1738	11,918	64,452	1765	25,148	363,368
1712	1,471	8,464	1739	8,134	54,452	1766	26,851	327,314
1713	178	17,037	1740	15,048	56,751	1767	37,641	371,830
1714	2,663	14,927	1741	17,158	91,010	1768	59,406	439,107
1715	5,461	16,182	1742	8,527	75,295	1769	26,111	199,909
1716	5,193	21,842	1743	9,596	79,340	1770	28,109	134,881
1717	4,499	22,505	1744	7,446	62,214	1771	31,615	728,744
1718	5,588	22,716	1745	10,130	54,280	1772	29,133	507,909
1719	6,564	27,068	1746	15,779	73,699	1773	36,652	432,448
1720	7,928	24,531	1747	3,832	82,404	1774	69,611	625,652
1721	8,037	21,548	1748	12,363	75,330	1775	175,962	1,366
1722	6,882	26,397	1749	14,944	238,637	1776	1,421	365
1723	8,332	15,992	1750	28,191	217,713			

To remedy the evil, in the latter part of this year a scheme for a paper currency was first laid before the Assembly of Pennsylvania; and in March following, after much controversy, a law was enacted for the issue of £15,000 currency, in bills of credit of from 1s. to £1 in value, to be loaned in sums of from £12 to £100, at an interest of 5 per cent. per annum, on pledge of real estate, ground rents or plate, of double the value of the advance; said bills to be a legal tender. In the latter part of the same year a further issue of £30,000 was authorized. By this timely relief, and doubtless still more by the increase of industry and economy induced by the recent *hard times*, the commerce of the province was soon revived.

The effect produced may be observed, by reference to the amounts of

* Peace established this year between England and France.

† First issue of government bills of credit in the province, to supply deficiency of currency occasioned by too large importations.

‡ Non-importation agreements were adopted in this year at most of the ports in the British North American colonies.

imports and exports, as well as by the examination of the annexed statement of the Commerce of the province and Tonnage built during these years.

Year.	Vessels built.	Tonnage.	Vessels cleared.	Tonnage.
1719	—	—	128	4,514
1720	—	—	140	3,982
1721	—	—	111	3,711
1722	10	498	96	3,531
1723	13	507	99	3,942
1724	19	959	119	5,450
1725	—	—	140	6,855

At various subsequent periods, in 1729, '39, '45 and '46, acts were passed for creating or re-emitting bills of credit. In 1748, when the amount outstanding was £85,000 cur., or £53,333 stg., a bill to increase the issues was brought before the Assembly; but was postponed on account of an attempt, at that time being made in parliament, to restrain all the American colonies from issuing bills of credit as a circulating medium. In the bill which passed parliament in 1751, prohibiting the northern colonies from creating or re-issuing bills of credit, except on extraordinary occasions, Pennsylvania was not included; her bills having remained at par or nearly so, while those of Massachusetts, owing to excessive issues, had depreciated to less than one-seventh their original value. Encouraged by this favour shown them, the Assembly in 1752 prepared a bill for a fresh issue of £40,000. Franklin, who was chairman of the committee to which the matter was referred, stated in a very forcible and lucid manner the advantages which had accrued to the province, and which might still be anticipated, from a moderate issue of paper currency; the measure, however, being in opposition to the wishes of the proprietaries, did not meet with the approval of the Governor, but led to long and angry discussions between him and the Assembly. No further issues were made until the war with the French on the western frontiers, in 1755, rendered them absolutely necessary. In 1730 the imports were to a very large amount, and, probably to assist in liquidating claims on account of a portion of these, an insolvent law was passed. The exportation of the staples of the Province about this period was as follows:

Years.	Bu. wheat.	Bbls. flour.	Casks bread.	Value of wheat, flour, bread and flaxseed. £ currency.
1729	74,800	35,438	9,730	62,473
1730	38,643	38,570	9,622	57,500
1731	53,320	56,639	12,436	62,582

In this latter year the population of Philadelphia was estimated at 12,000. The commerce of the Province annually employed about 6,000 tons of shipping; and about 2,000 tons were annually sold in foreign ports, principally West Indian.

The commerce of the Province from March 25, 1735, to March 25, 1736, was as follows:

	Arrivals.	Clearances.		Arrivals.	Clearances.
London	11	10	Brought up,	107	124
Bristol, Eng.	9	3	St. Christopher's	9	9
Liverpool	2	0	Newfoundland	3	1
Ireland	14	23	Boston	17	10
Gibraltar	1	6	Rhode Island	8	7
Lisbon	6	13	New York	4	2
Cadix	6	2	Maryland	7	13
Madeira	7	5	Virginia	5	2
Turk's Island	3	0	North Carolina	7	5
Antigua	20	20	South Carolina	1	15
Barbadoes	19	26	Georgia	1	2
Jamaica	9	16	Not specified	30	22
Carried up	107	124		199	212

Of the arrivals 51 were ships, 13 snows, 44 brigs, and the remainder smaller vessels.

Hostilities between Great Britain and Spain were recommenced in 1739; and in the following year the enemy kept several privateers off the American coast, which cruised successfully against the colonial commerce. In 1743 war was declared between Great Britain and France. In 1746, the enemy, finding the Delaware unprotected, made many captures, ascending the river as high as New Castle, and even threatening Philadelphia. In May 1748 the city was again thrown into a state of great alarm, and batteries were erected for its defence, owing to the appearance of a Spanish privateer in the bay. To retaliate in some measure upon the enemy, two privateers, the Wilmington and the Delaware, were fitted out and sent on a cruise.

The restoration of peace in 1749 gave a powerful impulse to commerce. The imports from Great Britain in this one year were nearly equal in amount to those of any three consecutive years preceding. The values of exports of wheat, flour, bread and flaxseed were as follows:—in 1749 £148,104 currency, in 1750 £155,175, and in 1751 £187,457; and the number of vessels cleared from 1749 to 1752, averaged annually 403; the population of Philadelphia being estimated at 15,000. This activity in trade continued, despite the refusal of the Governor to increase the paper currency, until the difficulties with the French and Indians on the western frontier, in 1755.

On the 4th March, 1753, the schooner *Argo*, Capt. Swaine, was despatched by the merchants of Philadelphia, in search of a north-west passage to India. Touching in New England, he entered Hudson's straits and came in sight of the island of Resolution. Vast quantities of driving ice forced him out of the straits, into which having in vain attempted to re-enter, and the season for discovery on the west side of the bay being over, he shaped his course for the coast of Labrador, along which he sailed from 56° to 65° north latitude, discovering six inlets, to the heads of all which he sailed and prepared charts of them. The vessel returned in safety to Philadelphia, whence she was again despatched on a similar voyage, under the command of the same captain, in 1754. From this voyage Capt. Swaine returned, without success, in October of the same year, having had three of his crew killed by the Indians. The merchants of the city expressed general satisfaction with Capt. Swaine's proceedings, and made him a handsome present. These we believe to have been the earliest voyages of discovery made by any of the North American colonists.

During the continuance of the *seven years' war* (which was commenced by a collision between the English and French troops on the western frontier of Pennsylvania, in 1755, although war was not declared until the following year) the commerce of the province suffered severely; the value of imports from Great Britain varying from £144,456 stg. in 1755, to £707,998 stg. in 1760. This latter sum, it is probable, from its vast amount, included military stores. Serious losses were occasioned to the mercantile community by the provincial government prohibiting the exportation of provisions and military stores to French ports, in 1756 and '7.

The restoration of peace with France and Spain, in 1763, removed many restrictions from commerce; but found the province burthened with a heavy debt, incurred in carrying on the war, her people impoverished, her merchants largely indebted to those of the mother country for goods imported, and trade generally depressed.

The continuance of difficulties with the Indians on the western frontier, after the restoration of peace with France, for some time kept the province in a state of excitement, (the boldness of the incursions alarming even the Philadelphians,) and tended to increase the embarrassment of trade.

The effect of these disturbing influences had not passed away when the British parliament, in 1764, commenced a course of injustice and oppression towards the North American colonies, which at length forced them into open rebellion, and resulted in their independence. With a fixed determination to resist the collection of all taxes imposed without their consent,

the colonists met the repeated attempts of the home government to force these odious measures upon them, by non-consuming and non-importation agreements, and at length by open resistance. Our limits preclude more than a passing notice of these exciting events, which, however, are detailed in every history of the American revolution. The influence of the non-importation agreements on commerce may be seen by contrasting the value of imports from Great Britain in 1769, (£199,909 stg.) when these agreements were generally adopted throughout the rebellious colonies, with that of the imports in 1771 (£728,744 stg.) when the non-importation restrictions were removed, save in reference to tea.

The following view of the trade of the province, given by Franklin in 1766, during his examination before the British House of Commons, in reference to the repeal of the stamp act, shows it to have been so completely tributary to that of Great Britain, as to leave little cause for regret at the separation of the two governments, which shortly followed. The imports from Great Britain into the province, he says, are computed at more than £500,000 stg. annually, and the exports to Great Britain at only £40,000 stg. the balance being paid by the produce of the province carried to the British, French, Spanish, Danish and Dutch West India Islands; to New England, Nova Scotia, Newfoundland, Carolina and Georgia; and to different parts of Europe, as Spain, Portugal and Italy; for which either money, bills of exchange or other commodities, suitable for a remittance to England, are received. These, together with the profits of the merchants and mariners, as well as the freights earned in their circuitous voyages, all finally centre in Great Britain, to pay for British manufactures used in the province, or sold to foreigners by the American traders.

Notwithstanding the measures of the home government, calculated, if not intended to injure the province, her resources were rapidly developed; and commerce, despite the many vexatious restrictions imposed, prospered, until stopped by a state of open warfare. We append a statement of the commerce in the years 1771-2-3: the exports in the years 1774-5 being to a still greater amount.

Years.	Value of Exports. £. stg.	Clearances.		Total. Tonnage.
		Square rigged vessels.	Sloops and schooners.	
1771	631,554	361	391	46,654
1772	784,254	370	390	46,841
1773	720,135	426	370	46,972

From 1776 until 1783 Pennsylvania had little or no foreign trade; her merchants, however, were not idle; but amongst the foremost in patriotically sustaining the struggle for independence, by their example, their money and their personal services.

The first bank established in the United States was opened at Philadelphia, July 17, 1780, under the title of the Bank of Pennsylvania, with a capital of £300,000 currency; the especial object of its creation being to supply the army with provisions. This bank, we believe, continued in existence until the Bank of North America went into operation, January 7, 1782. The latter was the only bank in Pennsylvania, until the United States' Bank commenced business in 1791.

With the restoration of peace in 1783, commerce was resumed; but much remained to be done in order to place it in a prosperous condition. Abroad, new relations had to be formed with countries whose sovereigns, with the return of peace, were disposed to pursue their old protective policy for the benefit of their own trade and commerce, and who looked with an evil eye upon our democratic institutions. At home, matters of still greater moment called for regulation: a currency deranged; public and private credit almost prostrate; tariffs various in the different states, and conflicting and fluctuating in a manner ruinous to trade and demoralizing to the community, by the temptation offered for smuggling:—these were some of the main depressing evils under which commerce laboured, and which had yet to be

removed ere it could prosper. The imports of manufactured goods, shortly after the return of peace, it is true, were to a large amount; (e. g. from Great Britain in 1783 £245,258; in 1784 £689,491;) but this was no evidence of returning prosperity; on the contrary it tended still further to embarrass, as the indebtedness incurred was far beyond the means of payment.

These difficulties continued throughout the United States, without material abatement, until, by the adoption of the federal constitution, in 1789, the thirteen republics unitedly placed themselves among the great powers of the earth. This compact not only increased the physical force of the republic, but, by the abolition of all transit duties between the states of the Union, and the prohibition of preference of any kind to the ports of one state over those of another, in the laws regulating commerce or revenue, it produced friendly feelings and a community of interests, in the different sections of the Union, where before had existed jealousy and bitter rivalry. Commercial relations were now entered into with the principal European nations, trade and commerce revived, the resources of the country were rapidly developed, and by the establishment of the bank of the United States, in 1791, a currency universally accredited was furnished. In the improved condition of the Union above noted, Pennsylvania fully participated.

A new era now opened to the commerce of the United States, in which the wars occasioned by the French revolution exerted a most powerful influence. By reference to the following table of Imports, Exports, Duties, Drawbacks, Tonnage, and Arrivals, from 1791 to 1841 inclusive, the effect produced on the foreign trade, by causes to which we shall allude, may be noted.

In 1792 France commenced her wars with the other European powers, and excepting an interval of peace of about 14 months, in 1802-3, continued them without intermission until the abdication of Napoleon in 1814. On the return of the Emperor in 1815, hostilities were renewed, and finally terminated in this year.

The vast numbers, in Europe, diverted from agricultural and other industrial pursuits by these wars, created a large market for the produce of Pennsylvania; while the immense naval armaments of the combatants, in all parts of the ocean, rendering it necessary to employ neutral ships to carry the produce of the French, Spanish, and Dutch colonies to the parent states, gave profitable employment to a large amount of her tonnage. Nor did her merchants rest satisfied with acting merely as carriers; they embarked in the trade on their own account, and also imported largely from China and India, for re-exportation to European markets; e. g. in 1806, there arrived at Philadelphia from Canton 12 ships and 1 brig, of an aggregate tonnage of 4,226 tons:—all with very valuable cargoes. Large fortunes were rapidly made; and many persons, before engaged in other employments, were induced to turn merchants. The commerce of the United States prospered to a degree unprecedented in the history of any nation, and in this prosperity Philadelphia, through which passed the whole foreign trade of the State, shared largely; her population increasing from 42,000 in 1790 to upwards of 96,000 in 1810.

Shortly after the declaration of hostilities between France and England, these two nations commenced issuing decrees and orders in council, and laying embargoes, of a most unjust and arbitrary character, for the avowed purpose of restricting the trade of neutrals with the enemy. Nor were the two great maritime powers of Europe alone in these restrictive measures; but by their influence or commands, Spain and other European governments followed in their footsteps.

In 1794 a treaty was concluded with England, by which she engaged to pay \$10,000,000 to the United States, as a compensation for property illegally taken, under her orders in council.

In 1798, in consequence of the arbitrary measures of the French government, commercial relations between the United States and that nation were suspended, and partial hostilities followed, but no declaration of war ensued. These difficulties were settled by treaty in 1800.

Foreign Commerce of Pennsylvania from 1791 to 1841, inclusive.

Years.	EXPORTS.		IMPORTS.	Duties on foreign merchandise im-ported.	Drawbacks on foreign merchandise re-exported.	Registered tonnage.	Vessels entered.*
	Domestic produce or manufacture.	Foreign produce or manufacture.					
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Tons.	
1791	-	-	-	1,475,428	8,976	53,898	595
1792	-	-	-	3,820,662	37,753	65,212	
1793	-	-	-	6,958,836	1,926,337	60,925	
1794	-	-	-	6,643,092	2,000,091	67,895	618
1795	-	-	-	11,518,260	3,053,109	83,624	779
1796	-	-	-	17,513,866	3,646,271	90,569	858
1797	-	-	-	11,446,291	1,586,065	88,401	641
1798	-	-	-	8,915,463	1,086,839	85,477	459
1799	-	-	-	12,431,967	2,086,714	90,944	443
1800	-	-	-	11,949,679	955,264	95,632	536
1801	-	-	-	17,438,193	3,181,101	109,036	667
1802	-	-	-	12,677,475	3,702,898	1,540,701	653
1803	4,021,214	3,504,496	-	2,727,365	1,297,662	64,637	611
1804	4,178,713	6,851,444	-	2,240,715	561,041	67,629	498
1805	4,365,240	9,397,012	-	3,507,038	872,238	71,199	520
1806	3,765,313	13,809,389	-	3,652,387	1,319,869	77,239	704
1807	4,809,616	12,055,128	-	5,100,657	2,052,551	86,728	701
1808	1,066,527	2,946,803	-	5,197,806	2,012,543	93,993	998
1809	4,238,358	4,810,883	-	2,599,673	928,568	94,659	351
1810	4,751,634	6,241,764	-	2,318,699	894,984	106,622	405
1811	5,694,447	3,865,670	-	3,332,377	879,527	109,629	500
1812	4,660,457	1,313,293	-	2,364,635	510,328	78,518	333
			-	2,474,990	378,936	71,281	

1813	3,249,623	327,494	3,577,117	-	503,593	185,821	64,537	74
1814				-	277,757	3,327	64,183	43
1815	3,569,551	1,024,368	4,593,919	-	7,199,699	95,806	77,199	487
1816	4,486,329	2,709,917	7,196,246	-	6,285,455	746,636	77,731	538
1817	5,538,003	3,197,589	8,735,592	-	4,307,790	702,619	80,513	532
1818	5,045,901	3,713,501	8,759,402	-	4,540,360	788,574	58,201	576
1819	2,919,679	3,374,109	6,293,788	-	3,848,630	570,274	59,626	450
1820	2,948,879	2,794,670	5,743,549	-	2,703,402	555,703	59,458	479
1821	2,832,387	4,569,380	7,391,767	8,158,922	2,719,996	474,394	59,296	441
1822	3,575,147	5,472,655	9,047,802	11,874,170	3,648,745	310,956	61,237	494
1823	3,139,809	6,477,383	9,617,192	13,696,770	3,991,687	612,037	61,409	482
1824	3,182,694	6,182,199	9,364,893	11,865,531	4,311,926	939,322	62,771	501
1825	3,936,133	7,333,848	11,269,981	15,041,797	5,270,030	998,778	65,590	484
1826	3,158,711	5,173,011	8,331,722	13,551,779	5,183,724	1,251,405	63,443	482
1827	3,391,296	4,184,537	7,575,833	11,212,935	4,188,915	1,053,105	61,700	469
1828	3,116,001	2,935,479	6,051,480	12,884,408	5,082,344	802,474	66,840	450
1829	2,617,152	1,472,783	4,089,935	10,100,152	3,574,818	708,970	50,235	374
1830	2,924,452	1,367,341	4,291,793	8,702,123	3,542,977	516,311	47,979	415
1831	3,594,302	1,919,411	5,513,713	12,124,083	4,372,533	326,607	51,294	396
1832	2,008,991	1,507,075	3,516,066	10,678,358	3,501,397	402,972	45,956	428
1833	2,671,300	1,407,651	4,078,951	10,451,250	2,985,278	697,927	49,022	474
1834	2,031,803	1,957,943	3,989,746	10,479,268	2,111,837	295,870	51,441	430
1835	2,416,099	1,323,176	3,739,275	12,389,937	2,506,281	101,812	51,588	429
1836	2,627,651	1,343,904	3,971,555	15,068,233	3,192,007	134,473	51,035	421
1837	2,565,712	1,275,887	3,841,599	11,680,111	-	-	39,056	409
1838	2,481,543	995,608	3,477,151	9,360,371	-	-	42,266	464
1839	4,148,211	1,151,204	5,299,415	15,050,715	-	-	48,569	521
1840	5,736,456	1,083,689	6,820,145	8,464,882	-	-	52,268	456
1841	4,404,863	747,638	5,152,501	10,346,698	-	-	47,380	504

* From the Commercial List and Philadelphia Price Current, to the kindness of whose editor we are indebted for several other items of information in this article.

The peace of Amiens, in 1802, restoring quiet to Europe, materially reduced the exports of Pennsylvania; but by the resumption of hostilities, in the following year, a fresh impetus was given to her commerce, which was only stayed by the embargo, to which we shall presently refer.

The *continental system*, Napoleon's favourite scheme for crushing the power of his great enemy, by prohibiting the importation of British produce and manufactures on the continent, was commenced by the issue of his celebrated Berlin decree, on November 21, 1806, declaring the British islands in a state of blockade, and prohibiting all commerce and correspondence with them. In retaliation, his Britannic Majesty in council published three orders, bearing date November 11, 1807, (other orders previously issued not proving effective,) by which, in addition to restrictions too numerous and complex to admit of specification here, all neutral vessels trading with France or her allies, were ordered, on pain of condemnation, to stop at a British port, submit their cargoes to inspection and pay a duty on the same.

The Milan decree, dated December 17, 1807, was issued by Napoleon as a rejoinder to the obnoxious orders in council, and declared that any vessel which had submitted to search by an English ship, or to a voyage to England for that object, or had paid any tax whatsoever to the English government, should be deemed denationalized, and a good and lawful prize.

On the 22d December, 1807, the United States government, prior to the receipt of the three orders in council, but with advices which satisfied them that measures of such a character were about being taken by the British government, laid an embargo on all vessels in the ports and harbours of the United States. This measure, unpopular as it was with the mercantile community, and deeply injurious to their interests, appeared to be the only alternative left the government, unless disposed to engage in a war. The great falling off in the exports of Pennsylvania, in 1808, and the consequent depreciation in the value of ships, was severely felt in Philadelphia, at that time the greatest commercial city of the Union.

The *long* embargo, as it is usually denominated, was raised March 1, 1809, and on May 20th of the same year non-intercourse was established with England and France. Great efforts were made, by the United States government, to induce the British and French governments to repeal their unjust orders and decrees. An arrangement of this character was effected with the British minister at Washington, and, in consequence, trade was resumed with England June 10, 1809; but the British government refusing to confirm the act of its agent, non-intercourse with that country was again established. Napoleon had long endeavoured and hoped to drive the Americans into a war with England. The opening of the trade with that country, while non-intercourse existed with France, was, therefore, a source of great vexation to him; he, however, dissembled his anger until the ports of his European allies were well filled with American shipping, when, in the month of March, 1810, by his Rambouillet decree, he ordered them to be seized. In this way vessels and goods, to the amount of many millions of dollars, were confiscated almost without the pretence of justice.

The laws directing non-intercourse with England and France were repealed by the United States in May, 1810, and a law enacted admitting to her ports the commercial vessels of those nations; but excluding their armed ships, and providing that if either of the above nations should modify its edicts before the 3d March, 1811, so that they should cease to violate neutral commerce, of which fact the president was to give notice by proclamation, and the other nation should not, within three months after, pursue a like course, commercial intercourse with the first might be renewed, but not with the other.

Napoleon was shortly after induced to give a promise of rather doubtful import; but which was construed, by the United States' government, to be an engagement to repeal his Berlin and Milan decrees, provided the British government would withdraw their retaliatory orders in council. This the

British government declined doing, on the ground that Napoleon's promise was not what the Americans chose to consider it.

Non-intercourse with Great Britain was again resumed by the United States' government, November 10, 1810, and, after several engagements between the armed vessels of the two nations, war was declared June 19, 1812, four days after which the orders in council were repealed. The right of searching American vessels for British born subjects, and of reclaiming them wherever found, which was asserted by the enemy, may be considered the main ground for the continuance of hostilities.

During the war the commerce of Pennsylvania was limited in its extent, and, in addition to the enemy abroad, had to contend with an evil at home, almost as disastrous in its effects—viz: a deranged currency. With the expiration of the charter of the United States Bank, in 1811, a mania arose for the creation of banks, under the influence of which 41, with an aggregate capital of \$17,000,000, were chartered by Pennsylvania, in 1814:—37 of these going into operation. In the autumn of this year a general suspension of specie payments, by all the banks south and west of the New England States, followed. The issues of their irredeemable paper were increased, and on July 1, 1816, the paper of the Philadelphia banks was at a depreciation of 17 to 18 per cent.; while that of the banks at Pittsburg and the western part of the State was at 25 per cent. discount. That this undue expansion of the currency exerted a powerful influence on commerce, can scarcely be doubted. To this cause, in some degree at least, may be attributed the vast amount of imports into the United States in 1815-16; paying a handsome profit to the early operators, but entailing heavy losses and bankruptcy upon a much larger number.

The second Bank of the United States commenced operations January 7, 1817; and in February entered into a compact with the State banks along the seaboard, in accordance with which they immediately resumed specie payments. Efficient measures for a contraction of the paper currency to a sound state do not appear, however, to have been taken until 1819; when the distress consequent upon this course of action was severely felt, not only by commercial men, but by the community of Pennsylvania generally. Upon the history of the contractions and expansions of the currency, from this last named period until the present time, which have exerted a most potent influence, not only upon the commerce of this State but on that of the world, our limits preclude us from entering.

On the restoration of peace, in 1815, the foreign trade of Pennsylvania had to seek new channels. The great European powers, being now at peace, turned their attention to the encouragement and protection of their own commerce and navigation. The carrying trade between colonies and their parent states, which had given employment to so much Pennsylvania tonnage, was now, of course, confined to vessels of the nation owning the colonies; and in the case of the British West India islands, the direct trade between the United States and them, was laid under such restrictions as to confine it almost exclusively to British ships as carriers.

The commercial regulations established by foreign governments since this period have exerted a powerful influence on the foreign trade of the State, by laying such heavy duties on her exports as to limit or prohibit their consumption; but a mere allusion to the various operations of these would far exceed our limits.

Another source of injury to the foreign trade has been the frequent change in the tariffs laid by the United States' government: and probably the detriment to the commercial and manufacturing interests, arising from this frequent fluctuation, may be considered as greater than that produced by the imposition of a high protective duty on the one hand; or a low duty, levied merely to defray the expenses of government, without regard to the protection of American manufactures, on the other.

The tariff of 1816 levied duties, avowedly for the purpose of protecting American manufactures. In 1818 and in 1824 changes were made lessening these rates. In 1828, the duties on articles constituting the principal

manufactures of the Union were increased; in 1832 again reduced; but were still so obnoxious to one of the states of the confederacy, as to induce her to threaten to nullify the acts of the general government. In the following year, the famous compromise act was passed, gradually reducing the rates of the high protective duties to a minimum rate in 1842. In 1841 the duties were increased; in 1842 the finances of the general government rendered a further increase necessary, and, ere another year rolls past, it seems likely that some further alteration will add its weight to the argument, that the commercial policy of the United States is *ceaseless change*.

Among the causes influencing the foreign trade we must now allude to one more local in its character than those above noted. Shortly after the restoration of peace, in 1815, the attention of many intelligent minds was directed to the improvement of the means of internal communication with the great lakes and the valley of the Mississippi. The state of New York, by the completion of the Erie canal, in 1825, was the first state of the Union to carry out these schemes, and to reap her reward from the vast increase of her trade with the west. Pennsylvania shortly after embarked in a similar enterprise, (see Article on Internal Improvements,) and Maryland was not slow to follow in her footsteps. Massachusetts more recently has put in her claim for a share of the trade with the west. Since the cost of transportation from an Atlantic port to a place of consumption in the west is as essentially a part of the cost of the merchandise to the consumer as its original cost on the seaboard, it is a truth self-evident, that no commercial emporium, depending for its prosperity upon such trade, can continue long to thrive, after a rival city has opened with the country whose trade is sought, a communication by means of which the cost of transportation is materially reduced. This simple truth it was that led to the construction of the various lines of internal improvements, connecting Philadelphia, Baltimore, and Boston with the west.

That Pennsylvania and Philadelphia have not derived nearly so great a benefit in their trade with the west, from the construction of these internal improvements, as has accrued to the state and city of New York, we apprehend no one will doubt; nor, unless the cost of transportation on the Pennsylvania works can be put at an equally low rate with that on those of the neighbouring states, can it be doubted, that Philadelphia must take her rank amongst the great manufacturing, rather than the commercial cities of the Union.

In concluding this historical sketch of the foreign trade of Pennsylvania, we append a tabular statement exhibiting its condition, along with that of the foreign trade of the United States, as shown by the exports at three several periods: first, for five years previous to the long embargo; secondly, for five years subsequent to the late war; and thirdly, for five years from 1837 to 1841.

Aggregate Exports from Pennsylvania to Foreign countries.

5 years.	Domestic.	Foreign.	Total.	Year.	Estim. pop. of Philad.	Estim. pop. of Penn.
1803 to 1807	\$21,140,086	\$45,617,469	\$66,757,565	1805	78,000	700,000
1816 to 1820	20,938,791	15,789,786	36,728,577	1818	105,000	1,000,000
1837 to 1841	19,336,785	5,254,026	24,590,811	1839	222,000	1,684,000

Aggregate Exports from the United States.

5 years.	Domestic.	Foreign.	Total.	Year.	Estim. pop. of the U.S.
1803 to 1807	\$216,013,759	\$222,931,422	\$438,945,241	1805	6,200,000
1816 to 1820	309,610,311	93,097,033	402,707,344	1818	9,100,000
1837 to 1841	515,410,422	85,461,675	600,872,157	1839	16,600,000

By the above statements it appears that the exports of the produce of the United States from Pennsylvania were less in the last than in either of the former periods, while the exports of domestic goods from the United States have been steadily and rapidly increasing. In the re-exportation of foreign goods the falling off is much greater.

The subjoined statement of exports and imports at Philadelphia, (through which passes the whole foreign trade of the State, excepting a very small trade at Presque Isle,) for the fiscal year 1842, shows a still further decline.

Value of Exports and Imports at Philadelphia for year ending September 30th, 1842.

EXPORTS.				IMPORTS.	
Countries.	Domestic produce or manufacture.	Foreign produce or manufacture.	Total.	Countries.	Value.
1. British West Indies .	\$567,483	\$ 2,345	\$569,828	1. England . . .	\$3,521,170
2. England . . .	397,297	30,727	428,024	2. Spanish West Indies .	970,903
3. Spanish West Indies .	358,055	60,996	419,051	3. Brazil . . .	724,735
4. Brazil . . .	307,451	100,968	408,419	4. Colombian ports . . .	483,946
5. British Am. Colonies .	378,134	520	378,654	5. Hanse Towns . . .	380,466
6. Buenos Ayres . . .	159,219	41,784	241,003	6. Buenos Ayres . . .	272,017
7. Colombian ports . . .	162,888	25,671	188,559	7. Spain on Mediterranean	134,922
8. Danish W. Indies . . .	168,688	10,464	179,153	8. Hayti . . .	107,777
9. Hanse Towns . . .	121,773	35,319	157,092	9. France on Atlantic .	87,976
10. Br. and Dutch E. Indies	123,485	399	123,884	10. Danish West Indies .	83,882
11. Sicily . . .	109,108	10,827	119,935	11. Italy . . .	82,109
12. Chili . . .	100,001	13,754	113,755	12. British Am. Colonies	82,028
13. Hayti . . .	67,400	4,893	72,293	13. Holland . . .	80,106
14. Italy . . .	16,851	44,803	61,654	14. British West Indies .	79,780
15. Swedish West Indies .	59,749	1,621	61,370	15. Chili . . .	71,600
16. Gibraltar . . .	35,971	24,860	60,831	16. Br. and Dutch E. Indies	55,338
17. Holland . . .	23,692	27,291	50,983	17. Mexico . . .	51,089
18. Africa . . .	44,792	2,636	47,488	18. Sicily . . .	43,521
19. Trieste and Adriatic .	2,514	30,628	33,142	19. Tenerife and Canaries	22,649
20. France on Atlantic .	17,820	1,760	19,580	20. Azores . . .	22,630
21. Texas . . .	12,994	222	13,216	21. Ireland . . .	17,230
22. French West Indies .	9,150	1,374	10,524	22. Swedish West Indies	8,926
23. Mexico . . .	7,037	2,991	10,028	23. Africa . . .	8,696
24. Tenerife and Canaries .	2,261		2,261	24. Portugal . . .	5,735
	\$3,293,814	\$476,913	\$3,770,727	25. Gibraltar . . .	5,061
					106
					\$7,381,788

Our limits preclude the specification of the articles forming the principal items of export and import to and from the several countries named. Of domestic exports, flour manufactured in Pennsylvania, Delaware and Ohio, forms by far the largest item. Corn-meal, wheat and corn, from the two first named states, are also exported largely. Tobacco, cotton, pork, lard, naval stores, rice, bark, &c., from the western and southern states; fish, oil, sperm candles, cotton manufactures, &c., from the New England states; manufactures of iron, refined sugar, soap and candles, manufactured tobacco, furni-

ture and various other manufactures of Philadelphia; lumber, butter, cheese, and numerous articles, the agricultural produce of Pennsylvania, compose the principal part of the remaining sum. The imports consist principally of manufactures of wool, iron and other metals, silk, cotton, linen, &c., from England and continental Europe; coffee, sugar, molasses, rum, hides, mahogany, dye-woods, manufactured tobacco, &c., from South America and the West Indies.

The total exports in 1842 exceed those of only three years since 1803, omitting the period of the war with Great Britain. The exports of domestic produce in 1842 exceed those of seventeen years during the same period. The imports for 1842 are less in amount than those of any year since 1821, when official records of value were first made.

THE DOMESTIC TRADE. The Constitution of the United States, as before mentioned, prohibits all transit duties on goods passing from one state of the Union to another, and releases vessels employed in the coasting trade from the necessity of *entering*. By this wise provision for the extension of trade, custom-houses between the different states are rendered unnecessary, and those on the seaboard, or at the great commercial emporiums of the interior, take no account of the merchandise passing from one section of the Union to another. In the absence of official data as to the extent of this important branch of trade, we purpose giving a hasty sketch of its course, or the channels through which it flows.

With the increase of population and of facilities for the transportation of merchandise, by the improvement of county roads, and the construction of turnpike roads, canals and rail roads, the interchange of commodities with neighbouring states has steadily and rapidly increased; while the application of steam to river navigation has rendered doubly valuable the noble streams of Pennsylvania, as a means of extending her commercial operations. By these various channels of trade, and by the waters of the Atlantic, together with those of the various navigable streams emptying into it, the produce of the State, to an amount far exceeding that exported to foreign countries, is distributed through a large portion of the Union.

The domestic trade of *Northern Pennsylvania* is very limited in its extent, this region being but thinly populated: its principal exports are lumber, coal, oats and neat cattle, together with some wool and butter. By means of the port of Erie or Presque Isle a communication is opened between the western part of this region and the great lakes, and trade is carried on with many of the towns on their shores. The tonnage of Presque Isle has been as follows, in the years 1832 to 1841 inclusive.

Year.	Tons.	Year.	Tons	Year.	Tons.	Year.	Tons.
1832	967	1835	1,730	1838	3,216	1841	2,820
1833	961	1836	1,877	1839	3,632		
1834	1,302	1837	2,993	1840	3,369		

The Blossburg and Corning railroad, the Allegheny and Susquehanna rivers, and the turnpike and county roads, at wide intervals traversing this section of the State, facilitate interchange of commodities with the neighbouring counties and some of the large towns, in the interior of New York state. No inconsiderable portion of the produce of the western part of this region passes down the Allegheny river to the towns bordering on the Ohio river, although a much larger part finds a market at Pittsburg. From the head waters of the Susquehanna river large quantities of lumber are annually sent to Baltimore.

The imports of this region, excepting the large supplies derived by internal trade with Pittsburg, are principally from New York city and state, and are similar in character to those hereafter mentioned as taken by the north-eastern section of the State.

Western Pennsylvania, with its coal, iron, flour, wheat, lumber, wool and manufactures of various kinds which are exported to a great amount, has access to the interior of Ohio and to the lakes, by means of the Pennsylvania and Ohio or Cross-cut canal and the Sandy and Beaver canal; by

the National road to Wheeling on the one hand, and Baltimore on the other; by the internal improvements of the State to the city last named, or via Philadelphia, to ports on the Atlantic; and by the Ohio river to all parts of the valley of the Mississippi.

Pittsburg, the great manufacturing city and commercial emporium of western Pennsylvania, sends her manufactures of iron, glass, cotton, &c., throughout the vast extent of country bordering on the Ohio and Mississippi rivers, as well as to the rapidly improving region extending along the lakes. In return are received drafts on the Atlantic cities or New Orleans, or the varied produce of the several states, viz: pork, beef, lard, butter, flour, hemp, tobacco, cotton, sugar, molasses, &c.; together with a large part of her supply of coffee, imported at New Orleans. A portion of the above named articles, as pork, lard, flour, hemp and tobacco, is re-exported from Pittsburg to Baltimore; and a still larger portion finds a market in Philadelphia, for home consumption or exportation. With the proceeds of the sales of these articles, and of large quantities of flour and wool, the produce of western Pennsylvania; together with drafts on the Atlantic cities received from sales to the west, she purchases in the Atlantic cities, for the consumption of her own citizens or the supply of a large extent of country in western Pennsylvania and Ohio, the cotton, woollen and leather manufactures, the bonnets, and other articles the manufactures of New England; and various foreign imports; *e. g.*, manufactures of wool, silk, cotton, linen, steel and other metals; porcelain and earthen wares, tea, spices, dried fruit, wine, brandy, &c.

Annexed is the tonnage of the port of Pittsburg in the years 1832 to 1841 inclusive. The sudden reduction observable in some of the years may be accounted for by the sale of steamboats, great numbers of which are built here for towns on the Ohio and Mississippi rivers.

Year.	Tons.	Year.	Tons.	Year.	Tons.	Year.	Tons.
1832	10,092	1835	13,972	1838	11,865	1841	10,343
1833	11,713	1836	10,767	1839	11,865		
1834	13,372	1837	12,632	1840	12,000		

According to Harris' Directory, the number of steamboats owned, in whole or in part, in the district of Pittsburg, in 1841, was 89, of an aggregate tonnage of 12,436 tons.

Southern Pennsylvania, whose exports consist principally of grain, flour, iron, leather, &c., finds a market for a large part of these in Baltimore, and the neighbouring counties of Maryland and Virginia. The National road, connecting with the internal improvements of Maryland, opens a communication between Baltimore and the western part of this region; while the eastern portion sends its produce by the Baltimore and Susquehanna or Franklin railroads, or by several turnpikes, into Maryland; or by the internal improvements of Pennsylvania and the Susquehanna river, or Tide-water canal to Baltimore, or more largely to Philadelphia for exportation or home consumption. In return are received goods of a description similar to those above mentioned as purchased in the Atlantic cities for Pittsburg.

Central Pennsylvania, embracing the greater part of the valley of the Susquehanna and the country bordering on the main line of the internal improvements of the State, west of the Susquehanna river, makes use of this river and these canals and railroads, together with the Tide-water canal, as outlets for its large exports. A market is found for its produce, consisting of wheat and other grains, flour, iron, lumber, coal, &c., at Baltimore, and to a greater extent, probably, via Philadelphia, at the various other Atlantic ports. The goods imported are of a character similar to those taken by Pittsburg.

North Eastern Pennsylvania, embracing a portion of the anthracite coal fields of the State, exports lumber and some agricultural produce, principally oats, to the neighboring towns of New York and New Jersey; neat cattle and butter also to the same markets, and to New York city; and

coal in large quantities to New York city and intermediate places, and to the Atlantic New England states. The principal channels for its exports, which are moderate in amount, are the Lehigh river, the Delaware and Hudson canal, and several turnpike roads. In return, articles such as enumerated as taken by Pittsburg, excluding the more expensive and luxurious, are received from New York city.

South Eastern Pennsylvania—embracing the earliest settled and most populous counties of the State, rich in agricultural products; together with other counties, abounding in anthracite coal and iron,—passes most of its exports through Philadelphia.

New York and the New England states bordering on the Atlantic take the largest amount of this produce, consisting principally of coal, flour, wheat, corn, &c. The demand for Pennsylvania bread stuffs in Boston has, however, diminished since the completion of the railroad connecting it with Albany.

In return Philadelphia receives from the New England states their manufactures of cotton and wool, shoes, bonnets, fish, oil, and various other articles, the produce or manufactures of these states; together with many foreign goods: and from New York, English, French, Chinese, and various other foreign goods too numerous to specify: the balance being greatly against Philadelphia, both in her trade with New England and New York.

To the neighbouring states of New Jersey and Delaware the exports are to a large amount, consisting of coal, lime, iron, and various manufactures of Pennsylvania; and the manufactures and produce of the New England states and foreign countries generally, especially manufactures of cotton, wool, leather and iron; sugar, coffee and tea.

The imports from New Jersey consist of agricultural produce generally; and those from Delaware, of flour, corn-meal, wheat, corn, bark, &c.

The trade with Maryland is to a very limited extent, and similar in its character to that with Delaware. Most of the freight passing between Philadelphia and Baltimore consists of goods *in transitu* between the latter city and New York, or the New England states.

The exports from Philadelphia to Virginia are to a moderate amount, and consist of articles much the same as those specified in reference to Pittsburg. In return, tobacco, wheat, corn, and some bituminous coal and cotton yarn are received.

To North Carolina, South Carolina, Georgia and Alabama, the exports are similar in character to those sent to Virginia; but to a very small amount. From North Carolina are received naval stores, lumber and some little cotton and cotton yarn; from South Carolina and Georgia, cotton and rice; and from Alabama, cotton.

Louisiana takes to a moderate extent, for her own consumption, of the manufactures of the New England states and Pennsylvania, and the manufactures and produce of foreign countries; and sends to Philadelphia large quantities of sugar and molasses, and some cotton, her own produce. Large quantities of heavy goods, destined for the western States, are forwarded by way of New Orleans; and by the same route Philadelphia receives large supplies of the produce of those states, viz.: cotton, tobacco, pork, lard, hemp, lead, &c.

The most important branch of the domestic export trade of Philadelphia is that with Ohio, Kentucky, Missouri, Tennessee, Indiana, Illinois, Mississippi, and Arkansas, especially the six first named, and consists of articles similar to those taken by Pittsburg, the principal portion being imports from the New England states, and from foreign countries, a large part of the latter, as before stated, being received via New York and Boston.

In addition to the articles above enumerated as being forwarded by way of New Orleans, Philadelphia receives from this vast and fertile region, now rapidly filling with an enterprising and industrious population, large quantities of flour, pork, lard, tobacco, hemp, neat cattle and horses, and some beef, furs, wool, &c., via Pittsburg and the internal improvements

of the state; these, however, would be vastly greater in quantity, and the purchases of goods in return proportionally increased, if the cost of transportation from Pittsburg to Philadelphia were still further reduced. The balance of this great branch of her trade being in favor of Philadelphia, is paid by drafts on New Orleans and New York.

With Michigan, Philadelphia has little or no trade.

Annexed is a statement of the enrolled and licensed tonnage, being that engaged in the coasting trade of Philadelphia for the years 1832 to 1841.

Years.	Tons.	Years.	Tons.	Years.	Tons.	Years.	Tons.
1832	31,147	1835	34,857	1838	45,080	1841	58,495
1833	30,529	1836	40,871	1839	48,293		
1834	32,060	1837	42,592	1840	51,676		

We also append a list of the coastwise arrivals at Philadelphia for the years 1787 to 1842, much the greater portion of the large number appearing in recent years being vessels engaged in carrying coal, or barges laden with merchandise, passing between the north-eastern and south-western markets of the Union, benefiting the mercantile community of Philadelphia but little.

Coastwise Arrivals at Philadelphia from 1787 to 1842, inclusive.

[From the Commercial List and Philadelphia Price Current.]

Years.	Vessels.	Years.	Vessels.	Years.	Vessels.	Years.	Vessels.
1787	390	1801	1,125	1815	1,113	1829	2,210
1788	490	1802	1,106	1816	1,101	1830	3,287
1789	376	1803	1,064	1817	1,238	1831	3,262
1790	715	1804	1,292	1818	1,101	1832	2,849
1791	853	1805	1,235	1819	1,046	1833	2,573
1792	{ doc's. lost.	1806	1,213	1820	877	1834	2,686
1793		1807	1,170	1821	913	1835	3,573
1794	1,250	1808	1,951	1822	1,212	1836	3,764
1795	1,228	1809	1,683	1823	1,018	1837	7,776
1796	1,011	1810	1,477	1824	981	1838	10,860
1797	929	1811	1,425	1825	1,195	1839	11,188
1798	1,002	1812	1,549	1826	1,195	1840	9,706
1799	825	1813	319	1827	1,320	1841	11,738
1800	1,051	1814	583	1828	1,247	1842	10,457

We close this imperfect sketch of the domestic trade of Pennsylvania (which, unlike the foreign trade, has been steadily increasing, and is destined to still more rapid improvement,) by giving the following statement of The Enrolled and Licensed Tonnage of Pennsylvania from 1789 to 1841, inclusive.

Years.	Tons.	Years.	Tons.	Years.	Tons.	Years.	Tons.
1789	4,015	1802	8,951	1815	22,360	1828	37,775
1790	5,180	1803	9,855	1816	24,744	1829	27,494
1791	3,222	1804	9,995	1817	24,296	1830	24,236
1792	3,515	1805	11,000	1818	25,148	1831	29,225
1793	4,625	1806	10,297	1819	23,673	1832	42,206
1794	6,273	1807	11,440	1820	24,117	1833	43,223
1795	7,325	1808	14,671	1821	25,080	1834	46,653
1796	7,669	1809	14,922	1822	23,995	1835	49,860
1797	8,178	1810	15,803	1823	27,291	1836	53,514
1798	8,348	1811	17,164	1824	27,766	1837	58,237
1799	7,857	1812	17,502	1825	29,421	1838	60,161
1800	8,032	1813	20,247	1826	31,583	1839	63,790
1801	7,444	1814	20,407	1827	34,436	1840	67,045
						1841	71,588

THE INTERNAL TRADE. In the preceding article, on the course of the domestic trade of Pennsylvania, allusion has been made to the extent of business between Philadelphia and Pittsburg, and between those two cities and a large portion of the State. This forms but a very small part of the internal trade of Pennsylvania, which embraces all the interchanges between sections adjacent, or widely separated, of every variety of merchandise, the produce of agriculture, the mine or the forest; or the manufacture of the factory or work-shop. Of its amount no other than a very vague estimate can be formed; it, however, vastly exceeds both that of the domestic and of the foreign trade, although it may be said to be yet in its infancy.

No state of the Union contains the elements of wealth more diversified in character or unlimited in extent than Pennsylvania; and with a virtuous, intelligent and industrious population to develop the resources of her rich and varied soil and countless mineral treasures, she cannot fail, in time, to possess within her borders a manufacturing interest, equal, if not superior to the agricultural. A *home* market for her agricultural produce will thus be created; while her exports will consist of manufactures sent to the western and southern states of the Union, and, probably in considerable quantities to foreign countries. This anticipated development of the internal trade of Pennsylvania must be promoted, in no small degree, by the State canals, railroads and other facilities for the transportation of produce, in the judicious management of which, those engaged in the domestic and foreign, as well as this branch of trade, have a deep interest.

What meaning have the terms *foreign*, *domestic*, and *internal* as applied to the trade of Pennsylvania? What is said about the Free Society of Traders? What quantity of tobacco was exported in 1688-9? Why was its culture abandoned? What is said about the effect of the war between England and France, on the commerce and currency of the province? Did the province in any one year prior to the revolution export to Great Britain a sufficient amount of her produce to pay for the goods imported thence? How was the balance paid? What injury was inflicted on the commerce of the province by the war from 1702 to 1713? For what was the year 1722 remarkable? In what year was paper money first issued by the province? Was Franklin favourable to these issues? In what year was the first insolvent law of Pennsylvania passed? What occurred to alarm the Philadelphians in 1748? What effect on the commerce of the province had the restoration of peace in 1749? How long did this prosperous state of trade continue? What is said of the voyage of the schooner *Argo*? What influence did the *seven years' war* exert on the commerce of the province? What led to the non-importation agreements in 1765 and 1769? What was their effect on commerce? From the nature of the foreign trade of the province before the revolutionary war, have we any reason to regret the separation of our country from the British empire? During what period was the foreign trade suspended by the revolutionary war? Was commerce in a prosperous state from the establishment of peace in 1783 until 1789? Did the adoption of the constitution of the United States in 1789 produce any change? Can you tell how, or why? Did the wars occasioned by the French revolution exert any influence on the commerce of Pennsylvania? How? What was the avowed purpose of the English in issuing their *orders in council*, and the French their *decrees*? What compensation did England agree to make the United States by treaty in 1794, for property taken under these orders in council? During what period were commercial relations between France and the United States suspended? What was the object of Napoleon's *continental system*? What induced the United States government to lay an embargo? What was the duration of the *long embargo*? What is said about Napoleon's Rambouillet decree? When was war declared against England by the United States? What may be considered the main cause for the continuance of hostilities? What exerted a very prejudicial influence on commerce during the latter part of the war and for several years after? What effect on the foreign trade of Pennsylvania had the restoration of peace in Europe and America in 1815? How have the commercial regulations of foreign governments influenced the commerce of the State? Have the frequent changes in the rates of duties levied by the United States' government benefited commerce? Has the cost of transportation of goods from a seaport to the interior of the country any influence on the commerce of that port? Is it not important then to Philadelphia that the rates of tolls on the rail-roads and canals of the State should be low? In how many years since 1803 have the total exports from Pennsylvania been less than in the year 1842? (See tables.) In how many years since 1803 have the exports of domestic produce from Pennsylvania been less than in the year 1842? What is said of the amount of imports in 1842?

May duties be charged on goods passing from one state of the Union to another? Which is the greater in amount, the foreign or domestic trade? Is the trade of northern Pennsylvania extensive or limited? What port, rail-road and rivers furnish outlets for its trade? Is the trade of western Pennsylvania limited or extensive? By means of what outlets is its

merchandise exported? What is its great commercial city? By means of what outlets do the southern counties of Pennsylvania export their produce? Are the exports of central Pennsylvania extensive or limited in amount? By means of what river, canals, and rail roads is its produce exported? What is said of the amount of exports from north-eastern Pennsylvania? By what river and canal have they an outlet? Through what channel does south-eastern Pennsylvania carry on most of its domestic trade? Has the domestic trade of the State declined or progressively improved?

What is said of the amount of the internal trade? What of its future prospects? The possession of what natural treasure is likely to increase the internal trade of the State? What else is mentioned as tending to increase this branch of trade?

19. INTERNAL IMPROVEMENTS.

1. *Canals and rail roads constructed by the State.*

THE attention of the legislature and people of Pennsylvania seems to have been directed, at an early day, to the means of facilitating transportation and trade between different sections of the State by means of inland navigation. In 1791 a report was made by a committee of the legislature, recommending the improvement of the Delaware, Lehigh and Lackawana rivers; a canal from the Schuylkill to the Susquehanna by way of the Tulpehocken and Swatara; the improvement of the Susquehanna, with its north and west branches, and a connexion by way of the Sinnemahoning between the West branch of Susquehanna and the Allegheny river and Lake Erie. A portage connexion was also proposed from the head waters of the Juniata to those of the Conemaugh, in order to form a communication from the Susquehanna to Pittsburg. As rail roads were not then thought of, it was proposed to connect the canals by means of good turnpike roads across the dividing summits.

Nothing, however, was effectually done by the State on the subject of internal improvements until 1824, when an act was passed authorizing the governor to appoint three commissioners to explore a route for a canal from Harrisburg to Pittsburg, by the waters of the Juniata and Conemaugh rivers; and also the route for a connexion by way of the West branch of Susquehanna and Sinnemahoning, with the waters of the Allegheny river. An examination of the country between the Schuylkill and Susquehanna, through the great valley of Chester and Lancaster counties, was also directed; together with a route "beginning at a point on the river Schuylkill in the county of Schuylkill, thence by Mahanoy creek, the river Susquehanna, the Moshannon, Clearfield and Black Lick creeks, the Conemaugh, Kiskiminetas and Allegheny river to Pittsburg."

In 1825 an act was passed authorizing the appointment of a board of canal commissioners, and directing the following additional surveys to be made: "one from Philadelphia through Chester and Lancaster counties, and thence by the West branch of the Susquehanna and the waters thereof to the Allegheny and Pittsburg; also from the Allegheny to Lake Erie; one other from Philadelphia by the Juniata to Pittsburg, and from thence to Lake

Erie; one other from the city of Philadelphia to the northern boundary of the State towards the Seneca or Cayuga lake; one other through Cumberland and Franklin counties to the Potomac river; and one by the Conococheague, or Monococy and Conewago to the Susquehanna." A survey was also directed, by the same act, to be made through the county of Bedford, to connect the route of the proposed Chesapeake and Ohio canal with the Juniata route.

By the act of 25th February, 1826, operations were no longer confined to the exploration of routes and preliminary surveys. The canal commissioners were directed to locate and put under contract a canal on the east side of the Susquehanna river, from the mouth of the Swatara to a point opposite the mouth of the Juniata; and one from Pittsburg to the mouth of the Kiskiminetas; thus commencing two sections of the main line of communication from Philadelphia to Pittsburg. They were also authorized, as soon as they might deem it practicable and expedient, to construct a navigable feeder of a canal from French creek to the summit level at Conneaut lake, and to survey and locate a route for a canal from that to Lake Erie.

In order to sustain the credit of the commonwealth, an internal improvement fund was established (April 1, 1826) under the control of the secretary of the commonwealth, the auditor general and the state treasurer, as commissioners; which fund was specifically appropriated, pledged and set apart for the purpose of paying the interest and reimbursing the principal of the State debt which might be created in consequence of the construction of the canals and public improvements: the accounts of the fund to be kept separate from the other public accounts. This fund consists of the tolls received on all the public works, the auction duties, the net proceeds of all escheats, and the dividends on road, canal and bridge stocks owned by the State. By subsequent enactments the tax on collateral inheritances, taxes on certain property, and sundry other appropriations were added to the fund.

In 1827 (act of April 9) the construction of a canal up the Juniata as far as Lewistown; another up the Kiskiminetas and Conemaugh to Blairsville, and one up the Susquehanna to Northumberland were duly authorized. By the same act, surveys were directed to be made of the route across the Allegheny mountain from Frankstown on the Juniata to Johnstown on the Conemaugh, with a view of determining whether the portage should be by "a smooth and permanent road of easy graduation, or by a rail way with locomotive and stationary engines or otherwise." Surveys were also authorized between the West branch and the Allegheny river; up the North branch from Northumberland to the State line, and from Pittsburg to Erie by the route of Beaver and Shenango. By the same act a survey for a rail road was directed to be made from Philadelphia, through Chester and Lancaster counties to the Susquehanna, and also one to ascertain the practicability of connecting the North branch of the Susquehanna and Lehigh rivers by a canal or rail way. A survey was also authorized for the

purpose of extending the canal down the Susquehanna, from the mouth of Swatara to the Maryland line. The commencement of operations on the construction of the French creek feeder (to Conneaut lake) was ordered, and further surveys directed to be made from Conneaut to Lake Erie. The canal commissioners were instructed to have surveys made for a canal from Philadelphia or Bristol, up the valley of the Delaware to Carpenter's Point; and if the same were found practicable, to locate and contract for the construction of such portion of it as should not exceed the cost of one hundred thousand dollars, provided that the average expense thereof should not exceed twelve thousand dollars per mile.

The act of 24th March, 1828, authorized the extension of the canal on the Susquehanna, from the mouth of Swatara to Columbia; from Lewistown to Hollidaysburg on the Juniata; from Northumberland along the West branch of Susquehanna to Bald Eagle; from Northumberland to the New York State line, on the North branch; from Taylor's ferry to Easton, on the Delaware; and from Blairsville to Johnstown on the Conemaugh. The construction of the Allegheny portage rail road, and the Philadelphia and Columbia rail road was ordered; and sundry preliminary surveys of other lines of proposed improvements were directed.

The construction of the main lines of communication being thus resolved upon, the work was commenced and vigorously pushed forward. The credit of the State being at that time unimpaired and money abundant, the legislature found little or no difficulty in obtaining the requisite funds for the prosecution of the work. Public opinion was strongly in favour of an extended system of internal improvement; and it was believed that the establishment of a communication between the eastern and western waters of the State and the lakes, would be the means of advancing the prosperity of our agriculture, commerce and manufactures, and would unite in a common interest the great natural divisions of the State, as well as in the end prove an important source of revenue to the commonwealth.

If the system of public works undertaken had been less extensive in the beginning, and had been confined at first to the main line between Philadelphia and Pittsburg, with the addition of the Delaware division; and these had been constructed with a strict regard to the public interest alone, and managed afterwards with prudence and economy, the favourable anticipations of the people would doubtless have been realized. But in order to obtain votes in the legislature for the commencement of the main lines, it was deemed expedient to push the improvements into every practicable part of the State, that as many as possible should partake of the expected benefit. The consequence has been the lavish expenditure of millions on lines as yet unproductive; while a system of management directed by party politics, and the employment of countless swarms of public agents as a reward for political services, without due regard to their character or qualifications, have not only absorbed the whole revenue derived from the finished

lines, but have brought the State annually in debt for their maintenance.

From 1828 to 1836 repeated loans were authorized and heavy appropriations made for the prosecution of the public works to completion. Not content, however, with the enormous amount already undertaken, new surveys were directed and the commencement of further extensions ordered. Among these was "a rail road from the borough of Gettysburg, to cross the route of the Baltimore and Ohio rail road, and connect with the Chesapeake and Ohio canal at some point in the State of Maryland at or west of Williamsport." Two hundred thousand dollars were appropriated for the commencement of this work, which was immediately begun.

This career of lavish expenditure and continual extension was at length checked. The alarming increase of the State debt, the enormous excess in the cost of completing many of the works above the estimates of the engineers, and the failure of the finished lines to support by their tolls the annual charges on them for repairs and expenses, became subjects for serious consideration. Those who had from the first doubted the expediency of undertaking such a gigantic scale of improvement, became decidedly hostile to the further extension of the system, while its warmest advocates were discouraged at the prospect before them. The public voice called for a retrenchment of expenditures, and the operations were prosecuted on a reduced scale. The work on some of the lines was suspended, and was only continued on those which were necessary to complete certain connexions, or those which were deemed likely to afford immediate advantage from completion.

The present deranged condition of the State finances, and the utter prostration of the credit of the commonwealth have now put a stop to the further prosecution of the public works. The time has come for serious consideration upon the means of extricating Pennsylvania from her present embarrassed condition. No remedy can be devised but that of taxing the people; and even taxation, so long as the public improvements are so managed as not to sustain themselves, will be ineffectual unless increased from year to year. A more economical superintendence of our canals and rail roads, or their transfer from the State to individuals or companies, seems to be imperatively demanded by the public interest. By such a transfer, on fair terms and under proper regulations, the State would be at once relieved from a heavy burden, while the people would still have the use and advantage of the public improvements as fully as at present.

But notwithstanding the present gloomy prospect of our financial affairs, and the heavy debt incurred by the commonwealth in the construction of her rail roads and canals, it should not be forgotten that the advantages to the *people* in the increased value of their property and the creation of facilities for trade and transportation, together with the expenditure among them of large sums

of public money, have far more than counterbalanced the burden of moderate taxation. Without the means of transportation on the public works, our agricultural, commercial, manufacturing and mineral resources would never have been developed as they now are; and the countless millions gained by the people, through the establishment of the public improvements, would cause the public debt to sink into insignificance if compared with the value of the advantages resulting from them.

In order to contrast the former times and facilities with the present, it may be mentioned that before turnpikes were constructed it required a good team of five or six horses from eighteen to twenty-five days to transport from 2,500 to 3,500 pounds of goods from Philadelphia to Pittsburg. On the completion of the turnpike across the mountains, the load of a wagon was increased to 6,000 or 8,000 pounds, and the trip was made in twelve or fifteen days. The price of carriage varied from three or four to thirteen cents per pound, the latter being paid for several loads soon after the peace with Great Britain. Since the construction of our rail roads and canals, any quantity of merchandise and produce can be transported between Pittsburg and Philadelphia, Baltimore or New York in six or seven days, at an average price, each way, of less than one dollar per 100 pounds, or one cent per pound; and the passage for travellers by canal and rail roads between Pittsburg and these cities is now made in two, three or four days, at less than half the former expense by the stage.

It is not, however, in the construction of canals and rail roads alone that the funds of the State have been invested. Extensive appropriations have been made towards improving the navigable channels of many of our rivers and large streams; to the making of roads and the building of bridges; while subscriptions have been liberally made on the part of the commonwealth to the stock of rail road, navigation, turnpike and bridge companies. From many of these little or no dividend is received, but still the people have the benefit of their use.

STATE CANALS.—The *Delaware Division of the Pennsylvania Canal* connects with tide water at Bristol on the river Delaware, 20 miles above Philadelphia, and thence extends up the course of that river to Easton at the mouth of the Lehigh, where it joins the navigation of the Lehigh Company. It is 40 feet wide, 5 feet deep, and has 23 locks 90 feet long by 11 feet wide, from 6 to 10 feet in height: total lockage 164 feet. Length of canal 60 miles: cost \$1,374,744. Total revenue to 1840, \$586,515: expenditures to same time \$638,831.*

Eastern Division.—This canal commences at Columbia, the western termination of the Philadelphia and Columbia rail road, and extends along the eastern bank of the Susquehanna river to

* The *revenue* is the amount of tolls received up to the year 1840; and the *expenditures* are made up of repairs, salaries of agents and other expenses necessarily attendant upon the operation of the works to the same period.

Middletown, where the Union Canal is connected with it, and where there are also outlet locks into the Susquehanna. From this place it still pursues the eastern side of the Susquehanna, passes through Harrisburg, and continues to Duncan's Island, near the mouth of the Juniata, where it connects with the Juniata division, and also with the Susquehanna division of the State canals. It is 40 feet wide at top, 28 at bottom, and has locks 90 feet long and 17 wide; the total rise is 95 feet. Length 43 miles; cost \$1,734,958. Revenue to 1840, \$1,047,826; expenditures, \$422,805.

Juniata Division.—At Duncan's Island is a dam across the Susquehanna for the purpose of supplying the eastern division with water, and a neat and substantial bridge has been erected by the State, having on one side a tow path, by means of which canal boats cross to the western side of the river. Here the Juniata division commences, and continues up the valley of the Juniata to Hollidaysburg in Huntingdon county, where it meets the eastern termination of the Allegheny Portage rail road. There are 17 dams on this route, and about 16 miles of slack water navigation. The canal is of the same dimensions as the eastern division; the locks are of the same length and 15 feet wide. Ascent of lockage from Duncan's Island to Hollidaysburg 576 feet; distance 130 miles; cost of canal \$3,437,334. Revenue \$491,104; expenditures \$592,180.

Susquehanna Division.—This canal connects with the Juniata division at Duncan's Island, and extends along the western bank of the Susquehanna, up that river to Northumberland at the junction of the North and West branches, where it unites with the North and West branch divisions. Ascent 86½ feet: length 39 miles: cost \$867,874. Revenue \$141,730; expenditures \$314,253.

North Branch Division.—Commencing at Northumberland, this canal follows the course of the North branch of Susquehanna to the mouth of Lackawana, in Luzerne county, above Wilkesbarre. There is a dam across the river at Nanticoke, and the upper end of the canal is supplied with water from the Lackawana. Lock chambers 17 by 90 feet: total lockage 112 feet: length 73 miles: cost \$1,491,894. Revenue, \$63,559; expenditures \$390,624.

North Branch Extension.—This division is in an unfinished state: it was intended to effect a communication with the New York State improvements by connecting it with the Chenango canal, and thus to afford a northern outlet for the coal and iron of Pennsylvania into a region which might furnish salt and gypsum in return. From Lackawana it follows the course of the North branch to Athens in Bradford county, near the northern line of the state. The cost of work done on this Extension to December 1, 1841, amounted to \$2,348,276; estimated cost of work remaining to be done \$1,298,416; total estimated cost \$3,646,692. Length of canal 90 miles; lockage 193 feet.

West Branch Division.—Leaving the Susquehanna Division at Northumberland, this canal extends up the West branch of Susquehanna, passing by Milton, Williamsport and other towns, to

Farrandsville, in Clinton county, reaching the bituminous coal region in that neighborhood. Ascent of lockage 138 feet; length of canal, including slack water, 75 miles; cost \$1,708,579. Revenue \$60,859; expenditures \$333,738.

Two *side cuts*, or lateral canals, extend from the West branch Division: one to Lewisburg in Union county, about half a mile, and the other to Bald Eagle creek near Lock Haven in Clinton county, three and a half miles in length.

The *Sinnemahoning Extension* is a continuation of the West branch canal to the mouth of Sinnemahoning creek, a distance of about 36 miles above Farrandsville. It is in an unfinished state, the work having been suspended in 1839.

Wiconisco Canal. This is an unfinished work extending along the east bank of Susquehanna, from the dam at Clark's Ferry, near Duncan's Island, to Millersburg at the mouth of Wiconisco creek, a distance of twelve miles, with an ascent of 35 feet. Cost of work done, about \$300,000; amount required to complete it \$81,836. By an act passed July 13, 1842, this canal was transferred to an incorporated company, reserving the right to the State to reclaim it after twenty years, upon paying to the company the amount expended by them in its completion.

Western Division. At Johnstown, (the western termination of the Allegheny Portage rail road,) the Western Division of the canal commences and continues down the Conemaugh and Kiskiminetas to the Allegheny river. Crossing this river near the mouth of Kiskiminetas, the canal passes along its western bank to Allegheny city, opposite Pittsburg, where it again crosses by a beautiful aqueduct, and is continued through Pittsburg to the Monongahela river. There are ten dams on the route, and upwards of twenty miles of slack water navigation on their pools. Below Blairsville the canal passes through a tunnel eight hundred and seventeen feet in length. Descent by lockage 471 feet; distance 105 miles; cost \$2,964,882. Revenue, \$887,013; expenditures \$889,834.

The *Beaver Division* extends from the town of Beaver on the Ohio, up Beaver river to the Shenango, and thence up that stream to the head of slack water navigation, about six miles above Newcastle. Length 31 miles: ascent 132 feet: cost about \$700,000. Revenue \$10,924; expenditures \$139,082.

At the mouth of Mahoning creek, a little below Newcastle, this division is intersected by the Mahoning canal, which extends into Ohio, and at Akron intersects the Ohio and Erie canal of that State. The Beaver division is but a part of an extended line of canal, intended to connect the Ohio river, by way of Conneaut lake, with lake Erie.

The *Erie Extension*, an unfinished work, divided into the *Shenango* and *Conneaut lines*, commences at the head of the Beaver division above Newcastle, and extends northward to the town of Erie. The ascending lockage, from the Shenango pool near Newcastle to the summit at Conneaut lake, is 287 feet; and the descent thence to lake Erie, 510 feet. The level of Conneaut lake is 419

feet above low water in the Ohio, at Beaver, and the surface of Lake Erie 91 feet lower than the Ohio. Length of the Erie Extension 105 miles; cost of work done about \$3,000,000.

The *French Creek Feeder*, a navigable canal, 27 miles in length, extends from French creek above Meadville to the Erie Extension at Conneaut lake; and with this is connected the *Franklin line*, which reaches from the aqueduct, seven miles below Meadville, where the water in the feeder is on a level with Conneaut lake, to Franklin on the Allegheny river. Descent of lockage 128 feet; length 22 miles. Cost of canal and feeder about \$900,000. Revenue \$4,767; expenditures \$133,979.

Recent acts of the legislature have authorized the transfer of the North Branch and Erie Extensions, the latter including the Beaver division, to incorporated companies, for the purpose of having these works completed without further expense to the commonwealth.

STATE RAIL ROADS. The *Philadelphia and Columbia Rail Road* commences at the intersection of Vine and Broad streets in Philadelphia, crosses the Schuylkill by a viaduct about two miles from the city, and pursues a western course by Downingtown and Lancaster to Columbia on the Susquehanna, a distance of 82 miles. Here it connects with the Eastern Division of the Pennsylvania canal.

The Schuylkill viaduct is 984 feet in length, and besides the rail road track has also a way for carriages and foot passengers. Immediately west of this, the road ascends by an inclined plane 2,805 feet in length, with a rise of 187 feet, on which cars ascend and descend at the same time by being attached to an endless rope moved by a stationary engine of 60 horse power, situated at the head of the plane. From this the road gradually ascends to a point near the intersection of the West Chester rail road, about 22 miles from the city, where its elevation is 543 feet above tide water. Passing this summit, the road descends 293 feet to the Brandywine viaduct near Downingtown, at a grade of 29 feet to the mile. It then rises, and after crossing the West Brandywine near Coatesville, ascends the North Valley Hill, at Mine Ridge Gap, by a grade increased on both sides of the summit for about three quarters of a mile, to 45 feet per mile. From this summit the road descends into the Lancaster valley,—passes the city of Lancaster, and descends to the Susquehanna river by a new route of six miles, descent 35 feet per mile, constructed to avoid the inclined plane formerly used near Columbia.

Some of the viaducts over the large streams crossed by this road are handsome and expensive structures, particularly those at Valley creek and West Brandywine: the latter is 835 feet in length, and 72 feet above the water. Those over the Big and Little Conestoga creeks are respectively 1,412 and 804 feet long. The highest embankment is 80 feet, and the deepest cuttings from 30 to 40 feet.

The motive power on this road is furnished by the State, and a toll is charged for it in addition to the road toll. The locomotive engines used for the transportation of freight, are capable of draw-

ing upwards of 100 tons each, exclusive of the weight of cars, engine, &c., or nearly 200 tons in all, at an average speed of ten or twelve miles per hour. Those used for drawing the passenger cars move with a lighter load and greater velocity.

This road was first opened for use in April, 1834. Cost \$3,983, 302. Revenue to 1840, railroad tolls \$1,205,419, motive power tolls \$824,919: expenditures, road \$585,343, motive power \$862, 074, locomotives, ropes, &c., \$436,579.

Allegheny Portage Rail Road. This road commences at Hollidaysburg, the western termination of the Juniata canal, and crossing the Allegheny mountain by the summit at Blair's Gap, descends to the valley of the Conemaugh, down which it proceeds to Johnstown and there meets the Western Division of the Pennsylvania canal. On this road there are ten inclined planes, numbered from Johnstown eastward, and eleven "levels," or graded lines of road, the inclination of which is generally from 10 to 15 feet to the mile, except that between Johnstown and the first plane, where it is about 24 feet, and that between the eastern plane and Hollidaysburg, where the maximum is 52 feet. The summit at Blair's Gap is 2,325 feet above the level of mean tide; the ascent from Hollidaysburg to the summit is 1,398 feet in a distance of ten miles, and the descent to Johnstown 1,171 feet in a distance of 26½ miles. There are five inclined planes on each side of the summit; the longest being No. 8, or the third one west of Hollidaysburg, which is 3,117 feet in length, with a rise of 307½ feet; and the shortest, No. 3, the third east of Johnstown, 1,480 feet in length, rising 130½ feet.

At the head of each inclined plane are two stationary engines of about thirty-five horse power each, which move the endless rope to which the cars are attached. Four cars, each loaded with a burden of 7000 pounds, can be drawn up at once, and as many let down at the same time; this operation can be performed from six to ten times in an hour. An ingenious contrivance, called a safety car, is attached to the rope below the road cars, which stops them in case of accident to the rope or fastenings. But one of the stationary engines is used at a time; the other being provided in order to prevent delay from accidents or repairs. On the short levels between the planes, horses are used for drawing the cars; but on the longer ones locomotives are preferred.

A viaduct over the Conemaugh, about eight miles east of Johnstown, is much admired for its boldness and beauty of design and execution. It is a single arch of 80 feet span, at a height of 70 feet above the water of the stream. In order to pass through an abrupt ridge near the head of the first plane east of Johnstown, a tunnel has been constructed 901 feet in length, 20 feet wide, and 19 feet high within the arch. The entrances have ornamental façades of cut stone, and the tunnel is arched with stone for 150 feet from each end, beyond which the rock is sufficiently solid to form a roof.

This road was opened for use in March, 1834. Length 36½ miles. Cost \$1,783,176. Revenue to 1840, rail road tolls \$413,

504, motive power \$443,480: expenditures, road \$293,135, motive power \$539,507, engines, ropes, &c. \$122,236.

The *Gettysburg Rail Road* was intended to effect a communication between the Pennsylvania improvements and those of Maryland, by connecting with the Baltimore and Ohio railroad, and also with the Chesapeake and Ohio canal. A company having been incorporated to make a rail road from Wrightsville, opposite Columbia, through York to Gettysburg, connecting at its eastern end with the Philadelphia and Columbia rail road, the State undertook to continue the road from Gettysburg westward to Maryland. After expending more than \$700,000 on the eastern end between Gettysburg and the summit of the South mountain, the work was suspended. Most of the mountain sections consisted of deep cuttings, high embankments and expensive tunnels, which yet remain in an unfinished condition, as a monument of useless public expenditure.

2. *Canals and Rail Roads constructed by companies.*

Lehigh Navigation. The improvements constructed by the Lehigh Coal and Navigation Company, consist of a succession of canal and slack water navigation, numerous dams being built across the river, forming navigable pools, and between these, canals of various lengths complete the communication. These works connect with the Delaware Division of the State canal at Easton on the Delaware, and thence extend up the Lehigh river by Bethlehem and Allentown to Mauch Chunk, at the eastern termination of the great southern anthracite coal basin. The canals are 60 feet wide at the water line, 45 at bottom, and 5 feet deep; locks 100 feet long and 22 feet wide, capable of passing boats carrying more than 100 tons: dams from 300 to 564 feet long, and 8 to 19½ feet high. Distance 46½ miles, with a rise in lockage of 353 feet.

From Mauch Chunk the same system of navigation is prolonged up the river to Whitehaven, 24½ miles; and thence to the falls at Stoddartsville, 13½ miles, is a descending navigation by artificial freshets, used chiefly for bringing down lumber. Distance from Mauch Chunk to the northern termination of the works 38½ miles. Ascent 936 feet. The locks above Mauch Chunk are of the same length as those below, and 20 feet wide: one of them has a lift of 30 feet, and can be filled or emptied in 2½ minutes. On this upper division of the work are 20 dams, from 14 to 38 feet high, and from 187 to 375 feet long. Total length of the navigation 84½ miles.

The *Lackawaxen Canal*, constructed as an extension of the Delaware and Hudson canal into Pennsylvania, enters this State near the mouth of Lackawaxen, and extends up that stream to Honesdale in Wayne county, where it connects with a rail road to the Lackawana coal mines at Carbondale. Length 25 miles; lockage rise 187 feet from the Delaware to Honesdale, which is 870 feet above tide water.

Schuylkill Navigation.—Commences at Fair Mount dam, near Philadelphia, and is continued up the Schuylkill by Norristown

and Reading to Port Carbon in Schuylkill county; thus opening a communication between the city and the heart of the Schuylkill coal region. It was commenced in 1815 and completed in 1826. This work, like the Lehigh navigation, is a series of pools formed by dams across the river, with intervening short lines of canal, sometimes on the east and sometimes on the west side of the river, which is crossed several times on the route. Near Reading it is intersected by the Union canal, and thus has a communication with the Susquehanna, and with the State canals of the interior. Length of navigation from Philadelphia to Port Carbon 108 miles, of which 58 is canal and 50 slack water. The longest line of canal on the route is 22 miles, called the Girard, the upper end of which is 5 or 6 miles below Reading. Width of canal 36 feet at top, 22 at bottom, and 4 feet deep. Locks 80 by 17 feet: total ascent 610 feet.

Union Canal.—This line of navigation passes from the Schuylkill near Reading, westward up the valley of Tulpehocken creek to the summit between the head waters of that stream and those of the Quitapahilla, a branch of the Swatara. It then descends the Swatara to its mouth, at the Susquehanna near Middletown. A branch of this work, 23 miles in length, serving the double purpose of a navigable canal and a feeder, extends up the Swatara northward to Pine Grove in Schuylkill county, from which rail roads are made to the coal mines of that region. Near the gap by which the Swatara passes through the Blue mountain, a large dam is constructed which forms a pool or reservoir several miles in extent. The feeder on the Swatara being lower than the summit level of the canal near Lebanon, water wheels have been erected, which are now aided by steam engines, for the purpose of raising the water by forcing pumps, from which it is conducted in a trunk several miles to the main canal. Near the town of Lebanon are also steam works by means of which a partial supply of water is obtained. From the commencement of this canal on the Schuylkill to the summit level is $41\frac{1}{2}$ miles; ascent of lockage 311 feet. The summit level is 7 miles long, and $498\frac{1}{2}$ feet above tide water. From this to the Susquehanna is $33\frac{1}{2}$ miles; descent $208\frac{1}{2}$ feet. Width of canal 36 feet, depth 4 feet: locks 75 by $8\frac{1}{2}$ feet. Length of canal 82 miles.

The *Susquehanna or Tide Water Canal* is partly in Pennsylvania, commencing at Wrightsville, opposite Columbia, and continuing down the west side of the Susquehanna river to Havre de Grace in Maryland. By means of this canal a communication is effected between the eastern division of the Pennsylvania canal and the tide water of Chesapeake Bay. Canal 50 feet wide, 5 feet deep; locks with double chamber, admitting the passage of two boats at the same time, or of a raft 170 feet long and 16 wide. Length 45 miles: descent 233 feet.

Conestoga Navigation, a series of dams and locks on Conestoga creek, from the city of Lancaster to the Susquehanna river. Locks 100 by 22 feet: length of navigation 18 miles: descent 62 feet.

Codorus Navigation, an improvement by dams, locks and canals

on Codorus creek, from the borough of York to the Susquehanna river. Length 11 miles.

Bald Eagle and Spring Creek Navigation, from the West branch State canal at Lock Haven in Clinton county, up the Bald Eagle and Spring creeks to Bellefonte in Centre county. Length 25 miles, 19 of which are finished. Lockage 183 feet.

Monongahela Navigation, an improvement extending up that river to the Virginia line: unfinished. Length about 40 miles.

Mahoning Canal, 8 miles of which are in Pennsylvania, extends from the Beaver division of the State canal, near Newcastle in Mercer county, up the valley of Mahoning river into the State of Ohio, and connects with the Ohio and Erie canal at Akron in Portage county, Ohio. Length 85 miles.

RAIL ROADS. In the city of Philadelphia and the incorporated districts adjoining, there are several short rail roads laid for the purpose of connecting the larger works of this kind which approach the city in different directions, and to distribute their conveniences and advantages of business more widely over the city and districts.

City Rail Road extends on Broad street from the Columbia rail road at Vine, to the Southwark rail road at Cedar or South street, one mile; with a branch down Market street from Broad to Third street, and thence down Third and Dock streets to the city warehouses near Dock street wharf. Length $1\frac{1}{4}$ mile.

Southwark Rail Road, from the City rail road at South street down Broad to Prime street, and thence by the latter to the Delaware above the Navy yard; nearly two miles. A branch of this road, half a mile in length, extends up Swanson to Cedar street near the wharf.

Northern Liberties and Penn Township Rail Road branches from the Columbia rail road and passes down Willow street to the Delaware, connecting with the Germantown and Norristown, and also with the Philadelphia and Trenton rail roads. Length $1\frac{1}{4}$ mile.

Philadelphia and Trenton Rail Road extends from Philadelphia by Frankford, Holmesburg and Bristol, to Morrisville, opposite Trenton, on the Delaware. Rails are laid across the bridge into Trenton, forming a communication with the rail road from Trenton to New York. Length about 28 miles.

Philadelphia and Wilmington Rail Road connects with the Southwark rail road at Broad and Prime streets in Philadelphia, crosses the Schuylkill by a viaduct at Gray's ferry, passes through Chester in Delaware county to the state line, and thence to Wilmington in the state of Delaware, where it joins the Wilmington and Susquehanna rail road to Baltimore. Length 27 miles.

Philadelphia, Germantown and Norristown Rail Road, 17 miles in length, extends on the eastern side of Schuylkill, by Manayunk, to Norristown in Montgomery county. About three miles from the city, a branch leaves this road and proceeds to Germantown, 3 miles.

West Philadelphia Rail Road, undertaken with a view to avoid

the inclined plane on the Columbia rail road west of Schuylkill, extends from that river opposite the city, below Market street, north-westward, uniting with the Columbia rail road about 8 miles from the Schuylkill. It remains in an unfinished state. The highest grade is nearly 57, and the average grade 43 feet per mile.

Valley Rail Road, from the Philadelphia and Reading rail road on the west side of Schuylkill, near Norristown, up the valley, to intersect the Philadelphia and Columbia rail road east of Downingtown, about 31 miles from the city. Length 20 miles. Maximum grade 35½ feet per mile. Road unfinished.

West Chester Rail Road, extends from a point on the Philadelphia and Columbia rail road, 22 miles from the city, to West Chester, about 10 miles.

Philadelphia and Reading Rail Road, connects with the Columbia rail road, at the foot of the inclined plane, on the west side of Schuylkill near Philadelphia, and thence extends up that river, by Reading, to Pottsville in Schuylkill county, thus opening a line of communication between Philadelphia and the Schuylkill coal region. Being connected with the rail roads which extend from the various mining districts to the river, it will afford a means for the conveyance of coal to the city at all seasons. The whole line, from Pottsville to Philadelphia, is composed of levels and descending grades, which gives great advantages to the descending transportation. A locomotive engine of 11 tons weight has conveyed from Reading to the Columbia rail road near Philadelphia, at a single load, 101 cars with a gross burden of 423 tons, at an average speed of 10 miles to the hour. A part of this load consisted of 2002 barrels of flour, weighing 190 tons. There are three tunnels on this road: one at Flat Rock, 8 miles from the city, 960 feet in length; another near Phoenixville of 1932 feet; and the third near Port Clinton, 1600 feet. Near the second tunnel, about 30 miles from Philadelphia, the road crosses to the east side of the river by a neat and well built viaduct, 288 feet in length and 24 feet above the water. Length from the Columbia rail road to Reading 54 miles: from Reading to Pottsville 36 miles. A branch, 5 miles in length, designed for the transportation of coal to the Delaware, leaves this road at the Falls of Schuylkill and crosses eastward to the Delaware river at Richmond, about three miles above Philadelphia.

Little Schuylkill Rail Road. From Port Clinton, at the junction of the two main branches of Schuylkill above the Blue mountain, this road extends up the Little Schuylkill to the Tamaqua coal mines, near the south side of the Broad mountain. Ascent 406 feet: length 23 miles.

Mine Hill and Schuylkill Haven Rail Road, extends from Schuylkill Haven, up the West Branch of Schuylkill, to the coal mines in the neighbourhood of Mine Hill. Length of road and branches, 20 miles.

Mount Carbon Rail Road, begins at Mount Carbon, a mile below Pottsville, passes by that town up Norwegian creek to the

commencement of the Danville and Pottsville rail road, and thence extends by branches to several coal mines. Length 7 miles.

Schuylkill Valley Rail Road, commences at Port Carbon, where the Schuylkill navigation terminates, and passes up the Schuylkill through the coal region to Tuscarora, a distance of 10 miles. It has many branches, extending to various coal mines, the collective length of which is 12 or 15 miles.

Mill Creek Rail Road, from Port Carbon to the mines about Mill creek, 4 miles, with branches amounting to 5 miles.

Danville and Pottsville Rail Road, leaves the Mount Carbon rail road about 3 miles above Pottsville, crosses the Broad Mountain by a summit 1014 feet above the level of the Susquehanna at Sunbury, and continues across the valley of Mahanoy creek, and over the dividing ridge between that stream and Shamokin creek, down which it proceeds to Sunbury on the Susquehanna. On this road there is a tunnel 700 feet long, and seven inclined planes, one of which is 1650 feet in length, with a rise of 345 feet. Chain cables are used on these planes instead of ropes. The eastern section of this road is completed to Girardville, 14 miles from Pottsville. A tunnel 2500 feet long has been cut through Bear Ridge, on the Girard estate, for the purpose of obtaining coal. The western section of the road is completed from Sunbury, 21 miles, to the new town of Shamokin, where there are extensive coal mines, and a furnace for smelting iron with anthracite. Total length 44½ miles. A branch, 7 miles in length, is contemplated to be made to Danville, on the North branch of Susquehanna.

Little Schuylkill and Susquehanna, or Catawissa Rail Road, extends from the termination of the Little Schuylkill rail road at Tamaqua, across the dividing ridge between the waters of Little Schuylkill and Catawissa creek, and thence down the valley of the latter stream to the town of Catawissa on the North branch of Susquehanna, about 35 miles. This road is unfinished.

It is proposed to extend it from Catawissa to Williamsport in Lycoming county. A branch, 12 miles in length, extends from this road near the summit north of Tamaqua, down the valley of Quakake, to the Beaver meadow rail road near the Lehigh.

Mauch Chunk Rail Road, from the coal landing at Mauch Chunk to the summit mines, 9 miles. Ascent 936 feet; highest grade 133 feet per mile. There is also a rail road of 5½ miles, from Mauch Chunk to the company's coal mines on Room Run. Ascent 534 feet.

Beaver Meadow Rail Road, from Parryville on the Lehigh, 6 miles below Mauch Chunk, up the river to the mouth of Quakake creek, and thence up that stream to the Beaver meadow mines; 20 miles.

Hazleton Rail Road, branches off from the Beaver meadow road and leads to the coal mines near Hazleton; 8 miles.

Lehigh and Susquehanna Rail Road, constructed by the Lehigh Coal and Navigation Company, from Whitehaven on the Lehigh to Wilkesbarre on the Susquehanna, where it connects with the

North Branch Canal. It has one tunnel and three inclined planes. Length 19½ miles.

Carbondale and Honesdale Rail Road, connected with the Hudson and Delaware canal navigation on the Lackawana, extends from Honesdale in Wayne county to the coal mines near Carbondale in Luzerne. Length 16½ miles. The summit on Moosic mountain, an elevation of 912 feet, is passed by means of inclined planes.

Pine Grove Rail Road, from the Union canal navigation at Pine Grove in Schuylkill county, to the coal mines, 4 miles; to which may be added the *Lorberry* and *Swatara* rail roads to other mines in the same region, 8 miles.

Lykens' Valley Rail Road, from Millerstown on the Susquehanna, along the north side of Berry's mountain to the Wiconisco coal mines at Bear Gap in Dauphin county. Length 16 miles.

Williamsport and Elmira Rail Road, completed from the West Branch canal at Williamsport, up Lycoming creek to Ralston, 25 miles; and thence to extend northward to Elmira in the State of New York, where it will connect with the Chemung canal. Total length 73½ miles.

Blossburg and Corning Rail Road, from the bituminous coal region at Blossburg in Tioga county, to the Chemung canal at Corning in the State of New York; 40 miles; part finished.

Harrisburg and Lancaster Rail Road, leaves the Philadelphia and Columbia rail road near Lancaster, and extends by Mountjoy and Portsmouth to Harrisburg, where it connects with the Cumberland Valley rail road. Near Elizabethtown is a tunnel of 850 feet. Highest grade, 42 feet to the mile; but generally less than 35. Length 36 miles.

Cumberland Valley Rail Road, commences at Harrisburg, and crossing the Susquehanna, continues westward by Carlisle, Newville and Shippensburg to Chambersburg in Franklin county. The bridge by which this road crosses the Susquehanna is a beautiful structure, having the rail road laid upon the flat roof, with carriage ways beneath. Length of road 52 miles. A route for a rail road to connect with this, and to extend from Chambersburg to Pittsburg, has been surveyed.

Franklin Rail Road, connects with the Cumberland Valley rail road at Chambersburg, and thence proceeds southward by Greencastle to the state line, which it crosses and extends to Hagerstown in Maryland. Length about 20 miles. It is intended to continue this road to the Potomac, to intersect the Chesapeake and Ohio canal.

York and Wrightsville Rail Road, extends from the western termination of the Philadelphia and Columbia rail road, across the Susquehanna to Wrightsville, and thence westward to York, 13 miles, where it intersects the Baltimore and Susquehanna rail road. It is proposed to continue this road to Gettysburg in Adams county.

Baltimore and Susquehanna Rail Road, proceeds southward from York, up the valley of Codorus creek to the Maryland

line 18 miles, and continues thence to Baltimore. Whole length, 56 miles.

Summary.

Length of State canals	848 miles.	Length of State rail roads	118 miles.
“ of Company canals	432 “	“ of Company rail roads	602 “
Total length of canals	1280 miles.	“ of private rail roads to mines, &c.	75 “
		Total length of rail roads	795 miles.

Turnpike Roads and Bridges.—Pennsylvania is distinguished for the number and excellence of her turnpike roads, which traverse the surface of the State in every direction, and extend their several branches to the most remote districts. They have been nearly all constructed by incorporated companies, and though few of them have ever yielded dividends equal to the interest on the cost of construction, and most of them little more than sufficient to keep them in repair, yet they should not be considered as an improvident and wasteful expenditure of capital. The advantages resulting to those portions of the State which they connect and through which they pass, from increased facilities of travelling and the transportation of produce and merchandise, the additional value which they consequently give to the lands adjacent to them, the easy and direct communication afforded by their means between different sections of the country, previously separated by impassable mountains or impenetrable wilderness, have altogether far exceeded in value the cost of all the turnpikes in Pennsylvania.

These roads are usually constructed of a bed of broken stone, from one to two feet thick, having a convex surface so as to permit the water to drain off freely, and sufficiently wide to allow the passage of two or three carriages abreast. On each side of this artificial road is another track, commonly called the summer road, which is made on the natural soil, and being generally smoother than the stoned road, is usually preferred when the ground is dry. On the steep mountain sides the turnpikes ascend by a winding series of regularly graded slopes, seldom exceeding three or four degrees, no angle exceeding five degrees being permitted by law.

The durability and smoothness of a turnpike depends much upon the kind of stone with which it is made. Those rocks which readily disintegrate or crumble by pressure and friction, such as coarse, soft or loosely cemented sandstones, are not well adapted to this purpose. Limestone, when not too soft, makes an excellent road if broken small; and on some of our best turnpikes has been conveyed many miles for making or repairing the roads in districts where other stone, of inferior quality, is convenient and abundant. In general, those rocks which have a compact texture, and are tough rather than hard, if broken sufficiently small to form a compact bed, make the best and most pleasant road.

The Philadelphia and Lancaster turnpike, 62 miles in length, is said to be the first road of this kind undertaken in the United States. It was commenced in 1792 and finished two years afterwards, at a cost of about \$465,000. Other turnpikes have since

been connected with it, forming a continuous line across the State throughout its whole length, from Trenton on the Delaware to the State of Ohio on the west, a distance of nearly 350 miles. Numerous other turnpikes intersect this main line, leading off from it in different directions, and again branching out and intersecting others, so as to form a network of communication to every part of the commonwealth, and rendering the most remote districts of comparatively easy access.

The common roads are under the care of supervisors elected by the voters of each township, and are kept in repair by a tax laid upon the inhabitants. It is the custom in many townships for those who prefer it to work on the road to the amount of their tax, being duly notified by the supervisor when and where their services will be required. Bridges over small streams are erected at the expense of the townships; but if the estimated cost of a required bridge appears to be larger than a township should reasonably bear, the court, grand jury and county commissioners may, on application, direct it to be built by the county.

The number and excellence of the bridges in Pennsylvania is a frequent subject of remark by travellers. It would be useless for us to attempt a particular notice of the vast number erected at the expense of the several counties, over the streams within their limits; many of them being substantial and well built structures, costing from \$20,000 to \$50,000. Those across the Delaware, Susquehanna, Allegheny, Monongahela and others of our large streams, amounting in number to 70 or 80, have been mostly built by incorporated companies; and many of them are so distinguished for excellence of construction and ingenuity of combination, as well as scientific boldness and beauty of design, that it may well be doubted whether any other part of the world can compete with Pennsylvania in the art of building wooden bridges.

What public improvements were recommended by a committee of the Legislature in 1791? When was the first act passed on the subject, and what was authorized by it? What was directed by the act of 1825?—And of 1826? When was the internal improvement fund established, and of what does it consist? What was authorized by the law of 1827?—Of 1828? What is said of the public sentiment then existing in favour of internal improvements? Why have these favourable anticipations not been realized? How was money obtained for the prosecution of the public works? What at length checked their further extension? By what means could the state be extricated from embarrassment? What is said of the benefits derived by the people from the public works? In what other improvements beside canals and railroads have the funds of the State been invested? Describe the extent of each of the following divisions of the State canal, and mention such other particulars respecting them as you can remember. Delaware division. Eastern division. Juniata division. Susquehanna division. North Branch division. North Branch extension. West Branch division. Sinnemahoning extension. Wiconisco canal. Western division. Beaver division. Erie extension. French creek feeder. What is the extent of the Philadelphia and Columbia rail road? Describe the Schuylkill viaduct and the inclined plane. What other particulars can you mention of this road? How is the motive power furnished, and what is said of the locomotive engines? Describe the Allegheny Portage R. R. How many in-

clined planes has it, and what is said of them? How are the cars drawn up and let down the planes? What is said of the Conemaugh viaduct and the tunnel? For what purpose was the Gettysburg rail road intended? Where do the works of the Lehigh Company commence, and what is their extent? The Lackawaxen canal? The Schuylkill navigation? The Union canal? How is its summit supplied with water? Describe the Tide water canal. Conestoga navigation. Codorus navigation. Bald Eagle and Spring creek navigation. Monongahela navigation. Mahoning canal. What three rail roads in Philadelphia are mentioned? Describe the Philadelphia and Trenton rail road. Philadelphia and Wilmington. (*And each of the other rail roads mentioned.*) What is the total length of State canals? Of company canals? Total length of canals in the State? Of State, company and private rail roads? What is said of the turnpikes of Pennsylvania? By whom mostly made? What have been the advantages resulting from them? How are they constructed? What kinds of stone are best for making these roads? What is said of the Philadelphia and Lancaster turnpike? What line of turnpike extends the whole length of the State? How are the common roads kept in repair?—Small bridges erected? What is said of the larger bridges across the rivers?

PART II.—OF THE SEVERAL COUNTIES.

I. ADAMS COUNTY.

THIS county is bounded on the north by Cumberland, east by York, west by Franklin, and south by the State of Maryland. Population, 23,044.

The face of the country is rather hilly. Along the north-western border is the elevated range called the *South* mountain; and many hills and ridges of trap rock traverse other parts of the county.

Adams county has no large streams. *Marsh* creek, *Rock* creek and other branches of the Monocacy which flow southward into Maryland; and *Bermudian* and *Conewaga*, in the eastern part, are the principal creeks. These afford many excellent mill seats, and many of them are used as such: the county may be said to be well watered.

The geological features of this county are diversified. A belt of limestone passes through the south-eastern corner, from near Hanover in York county, by Littlestown, nearly to the Maryland line, where it runs to a point, being overlapped by the middle secondary red shale and sandstone. This latter formation prevails over the greatest portion of the county, being broken, however, in many places by ridges and dikes of trap rock, which form rough and rocky hills. In the upper portion of the red shale formation, near the base of the South mountain, is a belt of calcareous conglomerate, similar to the famous variegated Potomac marble, which in some places would yield blocks susceptible of a fine polish. It occurs in great variety and beauty near the village of Fairfield or Millerstown. The South mountain, with its protruding ridges, consists chiefly of a hard white sandstone, accompanied by a variety of curiously altered rocks, highly interest-

ing to the scientific geologist. Native copper, together with the blue and green carbonate of this metal, occurs in the South mountain—and epidote, asbestos, zeolite and other minerals are found here. Iron ore occurs in several parts of the county, but is not much used.

The soil is of three kinds, partaking of the nature of the several rock formations. 1. The limestone in the south-eastern part of the county, and a narrow belt near the base of the South mountain. This is very productive and well adapted to agriculture. 2. The soil of the red shale formation. Where this red shale has been altered by the influence of the protruded trap rock in its vicinity, and changed to a bluish colour, the soil is clayey and heavy, unfavourable to vegetation and not much valued for agriculture. In low and wet situations, however, it produces tolerable crops of grass. But where the rock retains its natural red colour the soil is more fertile, and with proper improvement and the judicious use of lime and other manures, may be rendered highly productive. In many places, where the rock lies near the surface, the summer crops suffer much from drought. 3. The small patches and belts of soil arising from the disintegration of the trap rocks. This is a good soil, and if well farmed and manured is very productive, being considered nearly equal to that of the limestone.

The climate is similar to that of the other southern counties of Pennsylvania. The mean annual temperature is 51.36° Fahrenheit; that of the winter 29° ; of summer 73° . The thermometer seldom sinks below 0° during winter, or rises higher than 91° or 92° during summer. The greatest cold which has been known to occur here is 23° below 0° ; and the greatest heat 95° or 96° . Winter usually sets in about the middle of December, and spring opens about the middle of March. The maximum temperature occurs near the middle of July, and the minimum about the middle of January.

Gettysburg is the county town, situated rather in the southern part of the county, between Marsh and Rock creeks. It is 114 miles from Philadelphia, 52 from Baltimore, 24 from Chambersburg, and 32 from Hagerstown. Population 2,000. Its private dwellings are neat and substantial, though not expensive. The court house and public offices are of brick, and sufficiently commodious for the public business of the county. There are seven churches, which are mostly good buildings: one Presbyterian, one Lutheran, one Union, one Methodist, one Independent, one Roman Catholic and one African. The buildings belonging to the Pennsylvania College, and to the Lutheran Theological Seminary, are large and beautiful edifices, and being favourably situated present a splendid and imposing appearance.

Adams county contains a number of flourishing villages, the principal of which are Petersburg (York Springs,) Littlestown, Abbottstown, Berlin, Oxford, Fairfield (Millerstown,) Hampton, Hunterstown, Mummasburg and Heidlersburg.

Agriculture is the principal employment of the people of this county: its productions are wheat, rye, Indian corn, oats, buck-

wheat, grass, &c. The principal forest trees are several species of oak, hickory, chestnut, pine, ash and poplar. A large amount of timber is annually sold, which is used in different parts of this county and the adjoining parts of Pennsylvania and Maryland.

The manufacture of carriages is carried on extensively in Gettysburg: they are mostly sold in Maryland and Virginia. The weaving of coach lace; the manufacture of saddle trees, paper, cotton and woollen goods, and of flour, employ a large amount of capital and industry.

The value of real and personal property assessed for county purposes in 1842, was \$4,330,360. The actual value of real estate is perhaps from a third to a half more than the assessed value. County tax, \$14,390: State tax, \$6,101.

The turnpike and common roads are generally good. The principal turnpikes are those leading from Chambersburg and Carlisle towards Baltimore, and that from York to Gettysburg. There are no canals in the county, and but one unfinished rail road, the famous "Gettysburg extension," which was designed to connect the Philadelphia and Columbia rail road with the Baltimore and Ohio rail road, and the Chesapeake and Ohio canal near Williamsport in Maryland.

The state of education among the people generally may be said to be tolerably good. There are 18 school districts, in 16 of which the common school system has been in operation since 1835. The number of school houses is about 100, of brick, stone, and wood. The schools are kept open on an average about 5 months in the year; but for want of suitable teachers are not in the best condition. They are, however, perhaps equal to those of most of the other counties in the State.

Pennsylvania College is located at Gettysburg, and is in a very flourishing condition. During the last year it had in the collegiate and preparatory departments about 190 students. The faculty consists of a president and four professors; it has, besides, two tutors, and a lecturer on anatomy. The library contains 1200 volumes and is increasing yearly. The library of the president contains 1500 volumes, and those of two literary societies connected with the college, about 800 each. Connected with the Lutheran Theological Seminary is a library of 7000 volumes. There is a flourishing female seminary at Gettysburg.

This county was originally a part of Lancaster; but after the erection of York county, in 1749, it formed a part of that county. In 1800 it was laid off as a separate county under the name of Adams.

The first settlers came principally from Lancaster and Chester counties, and many foreigners, chiefly from Ireland and Scotland, were afterwards added to their number. Within the last 30 or 40 years, the original stock have been very much supplanted by Germans or their descendants; and the German language is now commonly spoken in several parts of the county.

How is Adams county bounded? What is said of the face of the country, mountains, &c. Mention the principal streams. Describe the rock forma-

tions. In what part of the county is variegated marble found? What ores and minerals occur? What is said of the different soils? Of the climate and the extremes of heat and cold? What is the name of the county town, and how situated? Mention some of the villages in this county. The agricultural productions. Forest trees. Manufactures. Turnpikes and rail roads. What is said of the state of education, and of the common schools? What college and seminaries are in this county? When was Adams county established, and to which did it originally belong? From whence came the first settlers and emigrants from foreign countries?

2. ALLEGHENY COUNTY.

The county of Allegheny is bounded on the north by Butler; on the east by Westmoreland; south and south-west by Washington, and north-west by Beaver. Population 81,235.

The face of the country near the rivers and principal creeks is much broken, being furrowed into deep ravines and hollows. As we recede from these, the surface becomes more level; but a large portion of the upland is of the kind called rolling, which is generally much prized by the farmers. But little of the land in this county can be called flat, excepting the alluvial or bottom lands along the rivers and creeks. Although some of the counties in Pennsylvania are more highly cultivated, and many have scenery more imposing and grand, yet few can present landscapes more pleasing. The river scenery, always beautiful on the Ohio and its tributaries, is almost equalled in beauty by the views presented from a thousand elevated spots, from which may be seen in varied succession, hills and dales, woods and thickets, orchards and farm houses, herds of cattle and cultivated fields.

Allegheny county is situated within the great western coal basin of Pennsylvania, and it is to an inexhaustible supply of the finest bituminous coal, that Pittsburg principally owes its prosperity as a manufacturing city. It is this which supplies steam power and fuel for the foundries, steam engine manufactories, rolling mills, nail works, cotton factories, and the vast variety of other industrial operations in manufactures and arts where heat is required; and which has in less than fifty years enabled the industry and enterprise of her people to convert a village of a few log huts into a great manufacturing and commercial city.

The lowest rock visible in the neighbourhood of Pittsburg is a soft red and blue shale of considerable thickness, on which rests a small seam of coal about a foot thick, surmounted by a stratum of limestone which contains abundance of fossil remains, chiefly encrini, producta, terebratula, &c. Next succeeds a thick series of slate, shale and sandstone layers; above which is the sandstone rock that affords so abundant a supply of building stone for the city of Pittsburg, and of which have been constructed the western penitentiary, the new court house, and other public and private buildings. Over this is a bed of shales, slates and sandstones, supporting a band of limestone about three feet thick, of a yellowish colour, which breaks by joints into square or rhomboidal fragments. Immediately overlying this is another series of variously coloured shales, supporting another thin bed of limestone resembling the one last mentioned, separated by ten or twelve feet of red and yellow shale from a fourth limestone band, from three to five feet thick. The next rock in the ascending order consists of thin sandstones, separated by bands of slate and shale, and upon which rest the limestone strata immediately beneath the great Pittsburg coal

seam. This limestone is of a blue or blackish colour, and consists of a number of layers separated by shale.

The bed of coal, which supplies Pittsburg and its neighbourhood with such immense quantities of fuel, is situated towards the summit of the hills that lie around the city, and is one of the most important and extensively useful coal deposits in western Pennsylvania, yielding coal of the purest and best kind. It extends from some miles north of Pittsburg, southward over the whole valley of the Monongahela, being found in Allegheny, Westmoreland, Fayette, Greene and Washington counties. The main bed of workable coal in this seam is from $5\frac{1}{2}$ to 9 feet in thickness; being in Allegheny county generally about six feet, and enlarging to the south-eastward. Above this, and separated from it by a thin layer of black clay shale, is a portion of the seam consisting of coal several feet thick, but so intermixed with thin bands of slate that it is generally rejected, on account of the trouble of separating the coal from the slate.

The elliptical conformation of the basin causes this coal, together with the accompanying rock strata of the series, to *ascend* and crop out towards the east and north-east, and also towards the north and north-west; and to *descend* gently towards the south. Hence we find the shales and sandstones that overlie this coal, and which form the summits of the hills around Pittsburg, covered in the southern part of the county by a deposit of limestone which is still higher in the series. This extensive and highly useful bed of limestone spreads over most of the southern part of Allegheny, generally capping the summits of the hills; but further southward it sinks below their tops, and is found in the hill sides and ravines, or forming the beds of the streams. It is of variable thickness, and consists of numerous layers of blue or dark coloured limestone, with interposed thin bands of calcareous shale. This bed of limestone is better adapted for burning into lime than most of the other strata in this region; and when the value of lime as a manure for the soil shall be properly understood in our south-western counties, it will afford a source of inexhaustible advantage to the agriculture of this part of the State.

That part of Allegheny county which lies east and south of the Allegheny and Ohio rivers, generally abounds in limestone and has an excellent soil. In that portion which lies west and north of those rivers, limestone is less abundant, and the soil is generally clayey. Here, however, the farmers who properly manure and cultivate their lands are well rewarded for their labour. The hill sides near the principal streams are generally too steep to be cultivated by the plough; but having a rich deep soil, those which have a southern or eastern exposure are admirably suited for gardens and graperies. From the success which has recently attended the cultivation of the grape, it is probable that before long many of the hill sides in this county will be devoted to the production of this delightful and wholesome fruit.

During the summer the thermometer ranges generally from 75° to 85° ; though some days occur on which it reaches 90° or 95° . In the winter it seldom falls below 15° ; but there are few winters in which there are not some days of extreme cold on which the mercury falls to 0° , and sometimes as low as 10° or 15° below. The spring season is sometimes cold and wet until after the beginning of May, and frosts occasionally occur early in September. The autumn usually affords much delightful weather, with a temperature of 60° to 75° , until November. The winter does not commonly set in with severity until about the first of January,

though sometimes much earlier. A general thaw, clearing the ground of frost, commonly takes place about the middle of March; but some sharp frosts are usual after this period, and indeed it is seldom that the month of May passes without frosts in the early part of it.

This county is traversed by the *Allegheny*, *Monongahela* and *Ohio* rivers: the two first mentioned uniting at Pittsburgh and there forming the Ohio. The Allegheny is remarkable for the clearness of its waters and the general beauty of the stream, being studded with many islands and flowing through a highly picturesque country. During high and middling stages of water, it is navigable for steamboats of light draught as high as Olean, in the State of New York. The benefit of the trade on this river to our western counties, and indeed to many of the western states, is incalculable. Out of it has been floated nearly all the pine timber, boards and shingles that have been used in the valley of the Mississippi from Pittsburgh to New Orleans. From three to six steamboats now run on this river from Pittsburgh to Freeport, Kittaning, Franklin and Warren; and in the summer season, when the river is low, small keel and flat boats are employed to do the carrying trade. About 400 large arks, or flat boats, from 65 to 120 feet long, come down the Allegheny annually, loaded with lumber and produce. These boats are generally sold at Pittsburgh to the coal merchants, who reload them with coal for Cincinnati, Louisville, Natchez and the intermediate ports.

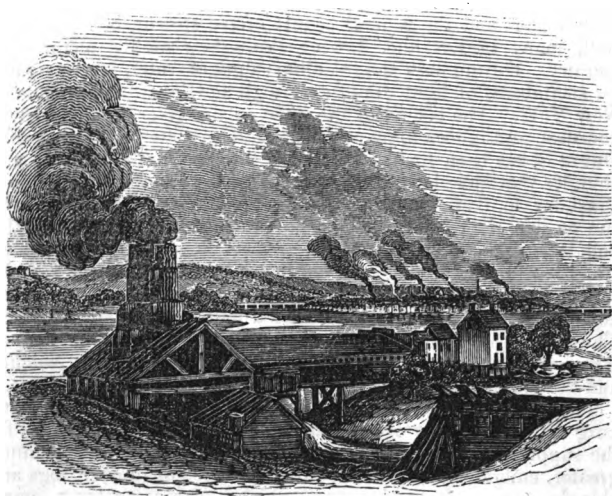
The ascending trade of the Allegheny consists chiefly of Pittsburgh manufactures, groceries, and foreign and domestic goods for the supply of the upper country: but the descending trade is much greater, embracing a vast amount of all kinds of lumber, logs and shingles, pot and pearl ashes, whisky, cheese, cabinet ware, patent tubs and buckets, hay, oats, potatoes, hoop poles, bark, &c. a large quantity of salt from the Kiskiminetas, and of pig metal from the great iron establishments in Venango and Armstrong counties.

The Monongahela, in appearance, offers a striking contrast compared with the Allegheny. Its waters are scarcely ever clear, and it has few or no islands in it. It flows through a picturesque, as well as highly cultivated country, and from its smooth and gentle current is well adapted to navigation. The trade on this river is also important, and to facilitate its navigation during the season of low water, a company has been incorporated to improve it by means of dams and locks. When this improvement shall have been completed, boats drawing four feet of water can pass at all seasons from Pittsburgh to Brownsville.

Of the Ohio it may be said that no stream in the world of the same length (and it is nearly 1000 miles long) exceeds it either in beauty or usefulness. Its smooth and gentle current; its ever-varying but always beautiful scenery; the high state of cultivation of the country through which it flows; the growing and already noble cities, thriving towns, and numberless comfortable and occasionally splendid dwellings on its banks; its adaptation to steam

navigation, and the value of the products carried upon it—make it altogether the most interesting river in the world.

Besides these rivers, Allegheny county is watered by a number of considerable streams, such as *Chartier's*, *Pine*, *Bull*, *Turtle*, *Peters'* and *Deer* creeks, on all of which are flouring and saw mills; as well as a number of smaller streams on which there are some similar improvements.



View of Pittsburgh from the mouth of Saw-mill run, on the Ohio.

The city of *Pittsburg*, being the capital, not only of this county, but of Western Pennsylvania, seems from its importance to require, in a work like this, a somewhat extended notice. We shall therefore preface our account of its present state by a brief history of its first settlement, rise and progress, abridged from "*Harris' Directory*," a valuable work to which we are indebted for many facts relating to *Pittsburg* and its vicinity.

In pursuance of the scheme formed by the French governor of Canada for connecting that country with Louisiana, which then belonged to the same nation, a military post, called fort Venango, had been established at the mouth of French creek, where the town of Franklin now stands. The governor of Virginia, alarmed by the progress of the French, sent *George Washington* to fort Venango to demand an explanation of their designs from the French commandant. Preparations had also been made by the French to take possession of "the Forks" at the junction of the Allegheny and Monongahela rivers, the spot now covered by the city of *Pittsburg*. Washington visited this place on his way to fort Venango, and carefully examined it, with a view to its location as a military post. This was in November, 1753, and it does

not appear that there was then a single white resident within the limits of the present city.

The Virginians, in the ensuing spring, commenced the erection of a fort in order to enable them to take possession of the country; but before being completed it was captured by a large body of French and Indians. It was named Fort Du Quesne, and remained in possession of the French from 1754 to 1758. From this place arms and ammunition were distributed to the Indians, and they were incited to those murderous attacks upon the frontier settlements of Pennsylvania, which so long harassed and disturbed the settlers. Measures were taken to expel the French from this post, among which was the unfortunate and unsuccessful expedition of General Braddock in 1755. A formidable army having assembled at Carlisle, under the command of General Forbes, in 1758, the capture of Fort Du Quesne was again attempted, and Major Grant was despatched in advance with 800 men. Having arrived near the fort, on the hill which now bears his name, he was surrounded and attacked by the enemy, losing above 300 men in killed and prisoners, being himself captured. General Forbes, however, pressed forward with the main body,—but on his approach the French set fire to the fort and abandoned it.

A temporary stockaded fort, to contain 220 men, was constructed on the bank of the Monongahela, about 300 yards from the point where Fort Du Quesne stood, and was named Fort Pitt, in honour of the distinguished statesman of that name. In 1759, General Stanwix began to construct another fort, between the site of Fort Du Quesne and the temporary Fort Pitt, to which the name of the latter was given. This was a formidable work, and is stated to have cost the British government about 60,000 pounds sterling.

In 1763, when most of the forts to the north-west were taken by the Indians, Fort Pitt was also besieged; but was relieved by Colonel Bouquet, who marched from Carlisle and completely routed the Indians. A treaty was made in 1764, by which peace was restored. About this time "the old military plan," being that portion of the city between Water and Second streets, and between Market and Ferry streets, was laid out. In 1764, the brick redoubt was built, which may still be seen a little west of Stanwix street and north of Penn street. This is the only remaining monument of British industry within the limits of the city, and has on its south side a stone block with the inscription "Col. Bouquet, A. D. 1764."

From this time until the close of the revolutionary war, but little improvement was made at Pittsburg. In 1775, the number of dwelling houses within the limits of the present city did not exceed twenty-five or thirty. The land where the city stands, and the country eastward of it and south of the Monongahela, containing about 5,800 acres, was a manor belonging to the Penn family, and remained as their property after the revolution. Arrangements were made in the spring of 1784, by the agent of the Penns, to lay out and sell town lots and out lots on this manor; and these having been surveyed, seem to have been rapidly pur-

chased. From this time improvement commenced: mechanics and traders composed a great portion of the population.

In 1786, the first number of the *Pittsburg Gazette* was published, and in an article contained in it, the number of houses in the town was stated to be about one hundred. Pittsburg was then in Westmoreland county, and the inhabitants had to travel about thirty miles to attend court. In 1788, an act was passed creating the county of Allegheny out of parts of Westmoreland and Washington counties. The courts were to be held at Pittsburg until certain trustees named in the act should erect suitable buildings on the reserved tract opposite Pittsburg; but in 1791 this provision was repealed, and the trustees authorized to purchase lots in Pittsburg for a court house and jail. The creation of a new county, and the establishment of the seat of justice at Pittsburg, had an effect in promoting the improvement of the town. A more important event, however, in the early history of Pittsburg, was the Western insurrection, in 1794, which compelled the government to send a large number of troops to this neighbourhood. These being mostly volunteers, active enterprising young men, many of them were so well pleased with Pittsburg and the surrounding country, that on their return home they made immediate preparations for emigration and permanent settlement there.

The first act for the incorporation of the *borough* of Pittsburg, was passed April 22, 1794. The act to incorporate the *city* of Pittsburg, was passed March 18, 1816.

In considering the present condition, manufactures, trade and resources of Pittsburg, it will be proper to include the adjoining city of *Allegheny*, and boroughs of *Manchester*, *Birmingham*, *Lawrenceville*, and other suburban dependencies, which, although not within the city proper, yet so far as general business interests are concerned, may be considered as belonging to the same community. Many of the large manufacturing establishments are located in these suburbs, and have their warehouses, owners or agents within the city proper, that being the place where the greater part of the business is transacted.

According to the census of 1840, the city of Pittsburg contained a population of 21,115, Allegheny, 10,089; and including the boroughs above mentioned and the thickly peopled districts around, it may be assumed that the total population of this *community of Pittsburg* is not less than 40,000.

The interests of this community, like those of all large towns, are essentially manufacturing and commercial; but in no town in the United States, of the same population, is so large a portion of the inhabitants engaged in manufactures. It is to her advantages as a manufacturing town that we are mainly to attribute her rapid increase in wealth and population.

Pittsburg and its suburbs contain 11 iron foundries and steam engine manufactories, 8 rolling mills and manufactories of bar iron and nails, 8 glass works, 6 cotton factories, 3 steel factories, 3 steam flouring mills, 6 steam saw-mills, 2 extensive rope walks, an oil floor cloth manufactory, extensive smith shops, plough, carriage-

and wagon factories, establishments for boat building, and for the manufacture of leather, hats, caps, paper, cabinet furniture, and a vast variety of other useful and fancy articles.

The position of this city, at the head of the Ohio river and at the termination of the Pennsylvania canal,—commanding also the trade of those two noble rivers, the Allegheny and Monongahela,—also ensure to it advantages as a commercial place, equalled by few others. Of the steamboats employed on the Ohio and the contiguous rivers, 89 in number, amounting to 12,436 tons, are owned either wholly or in part at Pittsburg.

The new court house is a splendid edifice, situated on Grant's Hill, at an elevation which commands an extensive view of the three rivers, with the hills, valleys, towns and villages in the neighbourhood. The building is 165 feet long, and 100 feet wide; having in the rear a spacious and well constructed prison. The architecture is of the Doric order, and the building is surmounted by a dome 37 feet in diameter at the base, the top of which is 148 feet above the level of the street. This court house was about five years in the progress of erection, and cost nearly \$200,000.

The Western Penitentiary is in Allegheny city, and is a good specimen of prison architecture in the Gothic style. It contains separate cells for the purpose of solitary confinement; and is managed with a view to the moral culture and reformation, as well as the punishment of the guilty.

The Presbyterian Theological Seminary is also in Allegheny city, built upon a commanding eminence, and is 140 feet long, by 50 feet wide; the central part being four, and the wings three stories high.

The Western University, the Orphan Asylum, the Third Presbyterian church, and several of the banks, as well as the two noble hotels, the Exchange Hotel and the Monongahela House, are also worthy of notice, as extensive and well constructed buildings.

There are in Pittsburg and its environs, 55 places of public worship, belonging to different denominations, viz. Presbyterian 20, Baptist 4, Roman Catholic 3, Episcopalian 5, Associate and Associate Reformed 6, Lutheran 2, Congregationalist 2, Disciples 2, Church of God, Unitarian, German Protestant, and German Reformed one each, Welsh 3, Coloured 4.

The theological seminaries are three: The Western Theological Seminary of the Presbyterian church, which has three professors, a library of about 6000 volumes, and has connected with it a large work shop for manual labour. 2. The Theological Seminary of the Associate Reformed church, which also has a valuable library and a commodious lecture room. 3. The Allegheny Theological Institute, organized in 1840 by the General Synod of the Reformed Presbyterian church. It is intended to erect a large edifice in Allegheny city, for the accommodation of this Institute.

Associations for the promotion of religious, moral and charitable objects are numerous in Pittsburg, Allegheny and the neighbouring districts. The cause of temperance has no where more earnest and untiring advocates, and perhaps in no place have their

efforts been crowned with more success. Literature and science are not neglected: ten or twelve associations or institutes for the promotion and diffusion of useful knowledge have been organized; several of which have libraries and reading rooms, and in some of them courses of lectures are delivered on scientific and literary subjects.

Banks and Insurance Companies. Bank of Pittsburg, capital \$1,200,000; Merchants & Manufacturers' Bank, capital \$600,000; Exchange Bank, capital \$1,000,000; Farmer's Deposit Bank, capital \$200,000, with privilege to increase to \$500,000. *Insurance:* Pittsburg Navigation and Fire Insurance Co., capital \$250,000, in shares of \$100 each; Fireman's Insurance Co., capital \$250,000, in shares of \$25 each; Office of Beaver County Insurance Co., capital \$40,000, in shares of \$50 each; Office of American Fire Insurance Co. of Philadelphia; Office of Philadelphia Fire and Inland Navigation Insurance Co.

The Pittsburg Water works were first put in operation in 1827, and a large part of the city is now supplied with pure and wholesome water from the Allegheny river. This is raised by means of a powerful engine into a reservoir above the level of the city, from which it is distributed by pipes laid through the streets. Works are in progress by which the utility of this invaluable public improvement will be very much extended. The number of feet of pipe, of different sizes, laid for the conveyance of water from these works is upwards of 51,000, or rather more than 9½ miles.

The gas works were erected in 1836, and are under the direction of twelve trustees, elected by the city councils. All the principal streets are now lighted with gas, and its benefits are soon to be extended more widely. The coal of Pittsburg is well adapted to the production of gas, and in no place are there greater natural facilities for obtaining this cheap and brilliant light.

There are six daily and twelve weekly newspapers published in Pittsburg, beside some religious, and other periodicals. Three of the newspapers are printed in the German language. The people are generally well informed and intelligent, and care is taken to promote the improvement of children and youth by means of common and Sunday schools, the good effects of which are visible among all classes of the rising generation. There are few places of the same population where there is less drunkenness and vice, or more regard for the interests of religion and morality. The people of this place and its vicinity deserve the reputation which they so extensively enjoy for industry. It has become proverbial that "the idler can find no company in Pittsburg." The effect of this persevering and unwearied industry and application to business, upon individual as well as general prosperity, is well illustrated by the fact that many of the citizens who are at present enjoying handsome fortunes were once labourers in the furnaces which they now own; and some who were not long since driving drays now ride in their own carriages. The advantages of a man's own individual exertion in raising himself to competence and a respectable station in society, have been truly exemplified in this place.

Within the bounds of this county, besides the city of Pittsburg and the adjacent places already named, are *Elizabethtown, M'Keesport, Sharpsburg, Bakerstown, East Liberty, Stewartstown, Noblesstown*, and other thriving villages. The three first named are incorporated boroughs.

The agricultural products of Allegheny county are wheat, rye, oats, indian corn, potatoes, &c., with some barley and buckwheat. Flax and wool are also produced in considerable quantity.

Coal is the great staple mineral product, of which it is estimated that from eleven to twelve millions of bushels are mined annually.

This county contains 92 flouring and grist mills, and 81 saw mills. About 45,000 barrels of flour are manufactured annually. The other principal manufactures of the county have been noticed in our account of Pittsburg.

The value of real and personal estate assessed for county purposes in Allegheny is \$13,475,619; county tax \$75,921; State tax \$17,507. The assessed valuation of property is, however, believed to be very considerably below the real value.

The Western Division of the Pennsylvania canal enters this county on the west side of the Allegheny river, about 30 miles above Pittsburg, and passing down on the same side, until opposite the city, is there taken across the river by a splendid aqueduct 1,200 feet long, built by the State at a cost of \$104,000. After passing through a tunnel under Grant's Hill, this canal terminates at the Monongahela river. Another branch of the canal continues through Allegheny city, and debouches into the Allegheny river a few hundred yards above the head of the Ohio.

Beside the aqueduct already mentioned, there are three bridges, each about 1,200 feet long, across the Allegheny river, connecting the cities of Pittsburg and Allegheny. There is also a bridge over the Monongahela river, 1,500 feet in length, forming a communication between Pittsburg and Birmingham.

Several turnpike roads pass in different directions through this county, which, together with most of the common roads, are kept in tolerable repair.

The attention which is given to the cause of education in Pittsburg and its vicinity has been already mentioned. The common school system is in general operation throughout the county, which has 33 school districts, maintaining 230 schools. Each of the five wards in the city of Pittsburg has its public school house, in which the male and female departments are under separate teachers. In the third ward is also a public school for the instruction of coloured children. These schools are kept open for about eleven months in the year: but in the country districts the average time which the schools are in operation does not exceed six or seven months. The Teachers' Lyceum of Allegheny county is an institution having for its object the improvement of teachers, and the general diffusion of knowledge.

This county has its share of historical interest, and in perusing the accounts of the old French and Indian wars we shall find it the scene of many a memorable event. Here Washington, when

but a youth, visited the Indians at Shannapin's town, and spent several days with them at Logstown. On his return from Le Bœuf, on foot, in the end of December, he and his companion came near perishing when crossing the Allegheny river at the head of Herr's Island. Their frail raft was broken by the drifting ice, and the future preserver of his country, together with his only companion, sank up to their necks in the freezing stream. They finally extricated themselves, but suffered intensely until they reached Frazier's at the mouth of Turtle creek, a distance of nine or ten miles. In this county is the memorable field where the gallant but imprudent Braddock, with his ill-fated host, were destroyed by the savages, and the bones of the slain, and other relics of the fight are yet found by the ploughman and the curious visiter. Here La Fayette, in 1825, landed from a skiff and walked over the bloody field where the illustrious friend of his youth first distinguished himself by his coolness and bravery. A few hillocks yet show the outline of that fort from which the hapless prisoners taken at Braddock's defeat were led to the stake. The territory which now forms this county has been the scene of many an Indian outrage and many a pioneer adventure, a few only of which have been preserved from the oblivion of time.

How is Allegheny county bounded? Is the surface level or hilly? What is the most valuable mineral production? How is the principal coal bed situated,—and what is said of its extent and thickness? Mention the principal strata of limestone and building stone. Describe the several varieties of soil. What is said of the climate? What three rivers are in this county? What is said of the Allegheny, its navigation and trade? Of the Monongahela? Of the Ohio? What other streams are mentioned? What is the principal city and how situated? Who first commenced the erection of a fort here, and what was it called after its capture by the French? By whom was it retaken and what was it then named? What remains of the old fortifications still exist? What was the number of houses in 1775? In what year did the place begin to improve? When was Allegheny county established, and to what had it previously belonged? In what year was Pittsburg incorporated as a borough, and when as a city? What city and towns are adjoining to and connected with Pittsburg? What is its population and that of Allegheny city? Total of these cities and adjoining towns? Mention the principal manufacturing establishments and their number? What is said of the advantageous position of this city? What are the principal public buildings? Describe the new Court-house, the Western Penitentiary, &c. What theological seminaries are situated here? What is said of the religious, moral and literary institutions? Banks and Insurance companies? Describe the Pittsburg water works. The gas works. How many newspapers are published? What is said of the inhabitants and their general character for morality and industry? Name some of the other towns in Allegheny county. What are the chief productions of agriculture? The staple mineral product? The manufacture of flour? What is said of the canal and aqueduct? The principal bridges? Of the common schools? Mention some of the historical events connected with this county.

3. ARMSTRONG COUNTY.

Armstrong county is bounded on the north by Clarion, east by Jefferson and Indiana, south by Westmoreland, and west by Butler.

The total population, by the census of 1840, was 28,365; but a portion having been since laid off into the new county of Clarion, leaves the present number in Armstrong at about 19,255.

The surface of this county is diversified, being generally what may be termed hilly or rolling. In some parts are large tracts of land which are unfit for cultivation; others are suited only to the growth of timber; while extensive portions are found which may be classed among the richest lands in the State. The alluvial bottoms along the streams are highly prized for their fertility, and are generally thickly settled and cultivated.

The *Allegheny* river passes nearly in a direction from north to south through the western part of this county, and is navigable for steamboats from Pittsburg to Warren, in Warren county. *Red Bank* creek forms the northern boundary of Armstrong county. *Mahoning* creek, a large tributary of the Allegheny, falls into that river 10 miles above Kittanning. *Cowanshannock* and *Crooked* creeks flow westward and empty into the Allegheny, the former two miles above, and the latter six miles below Kittanning. Crooked creek affords a number of excellent mill seats, and has on it six large flouring mills in operation. The *Kiskiminetas* river, which forms the southern boundary of the county, is one of the largest tributaries of the Allegheny, and is noted for the salt works in its vicinity. That portion of the county which lies west of the Allegheny river is watered by *Buffalo* creek, which flows southward, affording water power for a number of mills, and empties into the Allegheny two miles below the mouth of the Kiskiminetas.

This county lies within the great bituminous coal formation, and contains beds of coal, limestone and iron ore, which are rapidly adding wealth and importance to the county, as they are brought into productive usefulness. The want of capital, however, has hitherto retarded the development of the mineral resources of this region, until the recent erection of furnaces and other manufacturing establishments, which now begin to give promise of the future wealth to be derived from the formerly neglected hills of Armstrong.

The salt works on the Allegheny and Kiskiminetas rivers form an important item in the productions of this county. The wells for obtaining the salt-water are generally bored from 500 to 650 feet deep, being three inches in diameter for the first 200 feet, and the remainder two inches. Copper tubes are inserted, which have a band of leather filled with flax, tied around them above the point at which the vein of salt-water is reached. This fills the hole around the tube and prevents the fresh water above from mingling with the salt-water below. The brine is pumped from these tubes, by steam power, into a large reservoir, from which it flows into the boiling pans. After boiling for some time the brine is turned off into a cooling vat, where a sediment settles from it; it next passes into the graining pan, where after evaporation, the salt remains in the bottom. These pans are of iron, eight feet wide and twenty feet long, and are placed over furnaces in which the requisite heat is maintained. Each establishment consumes from

175 to 200 bushels of coal daily, and employs four or five men. The cost of boring a well and erecting the requisite works is about \$3,500; and the quantity of salt made from a well varies from 1000 to 5000 barrels yearly. The whole amount of salt manufactured annually within the county is about 320,000 bushels.

Kittaning, the county town, is situated on the east side of the Allegheny river, forty miles north-east from Pittsburg. Population in 1840, 1,323. It has a court-house, a prison, an academy, and several churches. Coal is abundant in the neighbourhood of the town. Kittaning is built upon the site of an old Indian village of the same name, which was taken and burnt during the French and Indian war by Col. Armstrong. About forty Indians were killed in the attack, a number of English prisoners were released, and by this well-timed and successful enterprise, an expedition which had been planned by the French and Indians against the frontier settlements was prevented.

Freeport is a thriving town, in the southern part of the county, situated on the Allegheny river, sixteen miles below Kittaning, and twenty-eight from Pittsburg. It contains five churches, two steam woollen factories, and a steam saw-mill. The Western Division of the Pennsylvania canal passes through the town, and it is the principal depot for merchandise coming from the eastward for the supply of Armstrong and the other northern counties bordering on the Allegheny river. Population 826.

Leechburg is a flourishing place, situated on the canal, 35 miles from Pittsburg and 15 from Kittaning. At this place there is a large dam built across the Kiskiminetas river, 27 feet high and 574 feet long, constructed for the purpose of feeding the canal from that point to Pittsburg. This forms an immense water power, which belongs to the State, and is not improved. If brought into use it would make Leechburg a place of much importance in manufactures.

This county contains also *Warren*, *Middletown*, *Lawrenceburg*, *Worthington*, and other rising towns and villages, with a population of from 100 to 250 inhabitants.

The agricultural productions are those common to the other western counties of the State, and much of the soil is well adapted to the raising of grain, large quantities of which are sent from the southern part of the county to supply the eastern market. Cattle and sheep are raised in great numbers. Within the last few years a superior breed of sheep have been introduced into the country, by which it is believed that wool will before long become one of the staple productions.

There are four furnaces for the manufacture of iron now in operation. Two of these are in Franklin township; one in Sugar creek, which is one of the largest furnaces in the State, and connected with which, near the mouth of Sugar creek, is an extensive rolling mill; both under the control of an incorporated company. The other furnace is in Madison township, near which is said to be a very large bed of cannel coal.

The value of property assessed for county purposes in 1842 was \$2,121,352; county tax, \$7,592; state tax \$2,308.

The Pennsylvania canal passes along the whole southern boundary of this county, a distance of 25 miles.

A tolerable turnpike road passes through Kittaning to Butler; and the common roads are kept in as good order as is usual in the western counties.

There is an academy at Kittaning, and the system of education by common schools is general throughout the county. There are 14 school districts, and 129 common schools, but they are kept open only about four months on an average during the year.

The population of Armstrong county is of a mixed description. Many of the inhabitants are of German and Irish descent,—principally settlers from Westmoreland and the neighbouring counties.

By what counties is Armstrong bounded? Describe the face of the country and soil. The principal streams. What valuable mineral productions? How is salt water obtained? In what manner is salt manufactured from it? What is the county town and how situated? Where is Freeport? Leechburg? What other villages in the county? What is said of the agricultural productions, &c.? Of the iron manufactures? Canal and turnpike roads? Education? Of the inhabitants?

4. BEAVER COUNTY.

Beaver county adjoins the states of Virginia and Ohio on the west, Mercer county on the north, Butler on the east, Allegheny on the south-east, and Washington on the south. Population 29,368.

The surface is generally rolling rather than hilly, with steep and precipitous ascents from the valleys of the principal water courses. The alluvial soil of the bottom lands is highly fertile, and most of the upland is adapted to the production of grain and for the grazing of cattle and sheep. Agriculture here is in a flourishing state, and among its other pursuits considerable attention has been bestowed upon the cultivation of the mulberry for silk, and the vine for grapes.

The *Ohio* river flows across the southern part of Beaver county, and in the north the *Mahoning* and *Shenango* unite and form *Beaver* river, which flows southward nearly through the middle of the county, and empties into the *Ohio* near the town of Beaver. In the east are *Slippery-rock* and *Conequenessing* creeks, both considerable streams, which unite their waters and flow westward into *Beaver* river. On *Beaver* river, within five miles from its junction with the *Ohio*, is a succession of falls and rapids, having an aggregate descent of 69 feet, and affording an immense water power for manufacturing and mechanical purposes.

Valuable and extensive beds of bituminous coal, with strata of limestone, occur in almost every part of the county. Near *Greensburg* is a bed of *cannel coal* about eight feet thick, resting upon three feet of ordinary bituminous coal. This *cannel coal* is light, compact, ignites with great facility, and burns with a strong bright flame.

Beaver is the county town, situated on an elevated plain near

the junction of Beaver river with the Ohio. It is an incorporated borough, and contains 551 inhabitants. Its public buildings are a court-house and county offices of brick, a stone prison, a bank, an academy and several churches. This town, though pleasantly situated, has not improved so rapidly as many other places in the same neighbourhood.

Bridgewater is situated on the west side of Beaver river, immediately at its junction with the Ohio, being connected with *Rochester*, on the opposite side of the Beaver, by a handsome and substantial bridge.

Fallston is a flourishing manufacturing town, at the foot of the falls of Beaver river, and thence deriving its name. A race has been constructed here, a mile and a half in length, by which the water is conducted to the wheels of a row of manufacturing establishments of various kinds, such as woollen factories, flour mills, saw mills, oil mills, paper mills and other industrial operations in which water power may be usefully employed. In the rear of this town is a bed of excellent coal, so conveniently situated that the fuel may be slid from the mouth of the mines into the kitchen yards of many of the houses.

On the opposite side of the river, and connected with Fallston by a handsome permanent bridge, is the village of *New Brighton*, where the water power is also immense, and various mills and factories have already been erected.

Brighton, on the west side of Beaver river, four miles above the Ohio, is a beautiful and flourishing place, commanding unlimited water power from the river, with a fall of about twenty feet. Here is a flouring mill capable of manufacturing 200 barrels of flour per day; an extensive cotton manufactory, and a large paper mill constructed upon the most approved plan. There is a tannery, and also a number of mechanical establishments.

Sharon is a thriving village on the west side of Beaver river, about a mile from the Ohio, having an iron foundry; an extensive establishment for the manufacture of patent tubs and buckets; boat yards for the construction of keel and canal boats, and various other manufacturing concerns.

Freedom, a village on the Ohio, about a mile above the mouth of Beaver, has several manufactories, among which is one for steam engines and boilers; and a boat yard for the building of steamboats.

Economy is a German settlement on the north-east bank of the Ohio, 18 miles below Pittsburg. The town contains about 100 houses, and is situated on a beautiful plain about 80 feet above the river. This town, together with a tract of land containing between 3,000 and 4,000 acres, is the property of the "Harmony Society," who, under the direction of George Rapp, emigrated from Germany about the year 1805, and first settled at Harmony in Butler county. From this place they removed to the banks of the Wabash, in the state of Indiana, where they cleared a large tract of land, built a town, and established various manufactories. Here they remained about ten years; but finding the climate unhealthy

they resolved to return to Pennsylvania, and in 1825 established themselves in their present location, where by the exercise of their peculiar habits of enterprise, industry and economy, they soon succeeded in founding a flourishing and beautiful settlement.

Their property is held in common as the general and indivisible stock of the society, and all persons who may unite with them and add their property to the common stock, are permitted, if they quit the community, to withdraw the principal without interest. They have a woollen manufactory, propelled by steam, in which from 70,000 to 80,000 pounds of wool are annually converted into broad cloth, satinet, flannel and blankets of superior quality. Their cotton manufactory and grist mill are also driven by steam; in the former about 300 bales of cotton are used in a year. Within the last few years their attention has been directed to the culture and production of silk, which in 1840 amounted to 2,389 pounds, being manufactured into silk goods of various descriptions.

Most of the ordinary branches of mechanical industry are likewise carried on, as well for their own use and comfort as also for the accommodation of their country neighbours of the adjoining settlements, with whom a considerable business is transacted by way of sale and exchange.

In the lower story of a brick building, 120 by 60 feet, they have an extensive museum of natural curiosities, a large number of paintings, and a fine collection of mineral specimens. The upper story of this building consists of one spacious room, in which the whole society on certain occasions dine together, as on the celebration of their yearly harvest home, the anniversary of their association, and other days of importance to them.

They have a large brick church in which they meet for worship twice on Sunday, and on one evening during the week. Their leader delivers a discourse in the German language, which is generally spoken among them, although many of them understand and speak English. A large and commodious school house is erected for the education of their children: they have a physician of their own, and an apothecary shop for the supply of medicines. A large and well arranged hotel is kept under the direction of the society, in which travellers and visitors are accommodated; and a post office is kept for the convenience of the settlement.

Their large flocks of domestic animals, horses, cattle, sheep and swine, are of good stock, and being well managed and carefully provided for, may be regarded as among the best in the western country.

In their agricultural operations they are surpassed by few, if any: their fields, meadows, orchards, vineyards, nurseries of fruit trees and gardens, are among the best in the country, and form a pleasing subject of admiration to the many travellers who visit this interesting place.

Each department or branch of business is under the direction of a foreman or superintendent, whose duty it is to see that every thing is properly performed according to the standing rules and regulations of the society, and to do justice and act impartially to all the members in the distribution of all the necessities of life,

This little community presents a pleasing and instructive example of the advantages derived from habits of industry, morality and strict adherence to sound religious principles. They show how much the sum of human misery may be lessened by dwelling in harmony, unanimity and peace; and how greatly the happiness of the human family may be promoted by the combined and benevolent action of both heart and hand.

Considering the limited extent of its territory, and the comparatively recent date of its settlement, Beaver county deserves favourable notice for the rapidity of its improvement, and for the variety and value of its productions of agricultural and manufacturing industry. It possesses the advantages of a healthy climate and a fertile soil; it abounds with timber and coal; its streams afford water power to an incalculable amount, and it possesses the facilities of a direct water communication with the east, west, north and south for at least three fourths of the year.

The Beaver division of the Pennsylvania canal extends through the county, from the mouth of Beaver river to Newcastle in Mercer county, where it connects with the Erie extension, forming, on the completion of the latter work, a direct communication from the Ohio river to Lake Erie. The Mahoning, or Pennsylvania and Ohio canal, connects the Beaver division of the Pennsylvania works with the Ohio canal at Akron; and the Sandy and Beaver canal connects the same works by way of Little Beaver and Sandy rivers, forming a junction with the Ohio canal at Bolivar.

The assessed value of property in Beaver county, subject to taxation in 1842, was \$4,047,701; county tax \$9,054; State tax \$5,228.

The system of education by common schools is general throughout the county. It contains 23 school districts, in which 162 schools are in operation, under the provisions of the law regulating the common school system. According to the reports made to the superintendent, they are kept open but about five months in the year on a general average. There is an academy in the town of Beaver.

There are about 30 places for public worship in the county, belonging to various religious denominations, of which the Presbyterians and Methodists are most numerous. Sunday schools are established in the towns and villages, and there are several Bible, missionary and tract societies, as well as other moral and benevolent associations.

The early settlers were mostly adventurers from other parts of Pennsylvania, attracted by the natural advantages possessed by this region. Some emigrants from the north of Ireland and from Germany have settled here, and the population is steadily increasing by new accessions from various sources.

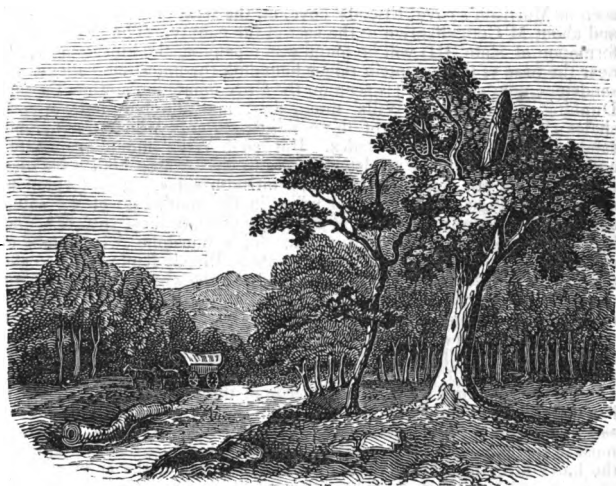
How is Beaver county bounded? What is said of the face of the country and soil? Describe the principal streams. What are the valuable mineral productions? Name the county town, its situation, public buildings, &c. What towns are at the mouth of Beaver river? Where is Fallston, and what manufactories are established there? New Brighton? Brighton? Sharon? Freedom? How is Economy situated, and by whom

settled? How is the property owned in this place? What branches of manufacture are carried on? What are the public buildings belonging to the society, and for what purposes used? What is said of their agriculture and domestic animals? In what manner is their business conducted? What is said of the habits of this people? What are the general advantages of Beaver county? Describe the canals here and their connexion with others. What is said of education and the common schools? Places of worship and religious denominations? By whom has the county been chiefly settled?

5. BEDFORD COUNTY.

Bedford is bounded on the west by Somerset and Cambria, north by Huntingdon, east by Franklin, and south by the State of Maryland. Population 29,335.

The face of the country is mountainous and uneven; many high ridges pass across the county in a direction nearly north and south, which are separated by deep valleys of unequal breadth. The most eastern of these mountain ridges is the *Cove* or *Tuscarora* mountain, which separates Bedford from Franklin: on the west of this is *Scrub Ridge*, of inferior height and extent. The next prin-



View of Cove Mountain from Scrub Ridge.

cipal mountain on the westward is *Sideling Hill*, which extends from the Maryland line across Bedford county, and into Huntingdon as far as to the Juniata river. Next is the huge irregular elevation called *Broad Top*, across which the northern line of the county passes, leaving nearly half of it in Huntingdon. South of Broad Top are *Harbour* mountain, *Ray's Hill*, *Clear Ridge*, and other ranges extending southward into Maryland. West of these is *Warrior ridge*, and next *Tussey's* mountain, stretching quite across

the county, and thence northward through Huntingdon and Centre, towards the West branch of Susquehanna. Further west are *Dunning's*, *Evit's* and *Wills'* mountains, and beyond these the great *Allegheny*, which forms part of the western boundary of the county.

Bedford county is well watered, though it contains no large streams. The *Raystown branch* of the Juniata and its many tributary creeks drain most of the northern and interior portions. In the south are numerous streams which flow southward into the Potomac. Every valley has its stream, fed by mountain springs, and these uniting furnish water power to a vast amount beyond that which is actually employed.

This county presents considerable variety and intricacy in the details of its geological features. All the rock formations which we have described as intervening between the lower limestone (II) and the coal bearing strata (XIII,) with both these included, may be found within its borders. Our limits will not permit a full description of the various ranges, foldings and doublings of these formations throughout the county; it will be sufficient merely to mention some of the places where the rocks of each occur, in order to give a general view of their positions.

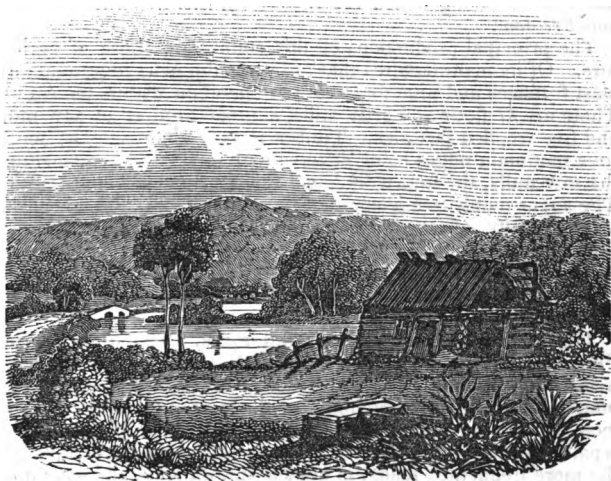
The lowest formation which appears in the county is the limestone (II) seen in Morrison's cove, Friends' cove, on the west of Tussey's mountain, and about M'Connellstown in the east of the county. The next overlying formation of slate (III) will be found accompanying the limestone, usually near the base of the mountain ridges bounding the limestone valleys. The sandstone next above (IV) is seen on the Cove mountain, and on Tussey's, Dunning's, Evit's and Wills' mountains; and the red and variegated shales (V) along the sides of these ridges towards which the mountain sandstone dips below these shales. But, as in Wills' mountain, where an anticlinal axis causes the sandstone strata to dip towards both sides of the mountain, the red shale will be found on both sides. This formation is also seen in Pigeon cove, a little valley in the south-east of the county, adjoining Maryland; the centre of the valley being of these shales, bounded by the limestone of the next formation. This limestone (VI) is found east of Tussey's mountain, crossing the Juniata at Bloody Run; and also about the town of Bedford, from which it extends on the west of Evit's mountain to the Maryland line. Another long narrow belt of the same limestone, ranges from the southern boundary of the State up Wills' creek on the west of Wills' mountain, stretching north-eastward quite across the county to the Juniata near Hollidaysburg. The fossiliferous sandstone (VII) will generally be found to accompany the limestone last mentioned, commonly forming sharp rough hills along the side of the valley which contains the limestone. The dark and olive coloured slates, with the gray and red sandstones and red shales of the next two formations (VIII and IX) occupy most of the country between Scrub Ridge and Sideling hill, and also from the latter to Warrior Ridge. In the western part of the county there is also a broad belt of these formations extending from the limestone and fossiliferous sandstone to the Allegheny mountain. The coarse gray sandstone of the next formation (X) is found on Sideling hill, Ray's Hill, Harbour mountain, and on the eastern front of the Allegheny. The red shale (XI) next below the coal measures, is seen at the base of Broad Top in Wells' Valley, and westward in Ground Hog valley. The sandstone (XII) which lies immediately below the coal of the Broad Top region, differs from the general character of the same formation below the other coal measures of the State, having less of the pebbly conglomerate character, and more resembling the sandstones between the coal beds themselves. Broad Top mountain, only a part of which is in this county, is a broad

irregular plateau, having several spurs running out towards the bounding valleys. Beds of coal have been opened on it in many places, and have been found to be from three to eight feet thick, yielding coal of good quality, though less bituminous than that west of the Allegheny mountain. This region has been but imperfectly explored, and the number of coal seams, with their extent and relative positions, has not been fully ascertained.

Iron ore occurs in many parts of the county, and is extensively mined in several places for the supply of furnaces.

This mountainous region presents a great variety in the character of its soil. Some of the valleys are very fertile, particularly those where limestone abounds; the uneven rolling country occupied by the slates, shales and red sandstones, is less productive, and a considerable part of the county consists of rocky mountains and hills unfit for the purposes of agriculture. The quantity of land unfit for cultivation is estimated to be 131,200 acres.

The climate is healthy, and somewhat colder than that of the less mountainous region in the south-eastern part of the State.



View near Bedford.

Bedford is the county town, situated near the head of the Rays-town branch of the Juniata, on the main turnpike from Philadelphia to Pittsburg, and has a population of 1022. The buildings are mostly of stone or brick, and the town presents a neat and pleasing appearance. The court-house, county offices and prison are handsome well-built edifices; there are also churches for Presbyterian, Lutheran, German Reformed, Methodist and Roman Catholic congregations. It is a place of some business, and the borough contains four grist mills and a woollen factory.

Near this town are the celebrated Bedford Springs, the water of which has been found to have a beneficial effect in many com-

plaints. They are much resorted to by invalids, and during the summer season even by the healthy, who quit the toils of business in the cities to invigorate their frames by breathing the pure mountain air, and by healthful excursions among the wild and beautiful scenery of the surrounding country. The buildings for the accommodation of strangers are large and commodious; the grounds about the springs are tastefully ornamented with neat bridges, railings and gravel walks; and few places of the kind present more agreeable attractions to the invalid, the citizen, or the traveller.

M^r Connellstown, in the eastern part of the county, on the Chambersburg and Bedford turnpike, is an incorporated borough containing 486 inhabitants.

Martinsburg is also a borough, situated in Morrison's Cove in the north of the county, with a population of 422.

Shellsburg is a borough, on the turnpike, nine miles west of Bedford, with 316 inhabitants.

Several villages of some note are situated in different parts of the county, among which are *Woodbury*, *Stonerstown*, *Rainsburg* and *Freedom*.

The principal productions of this county are those of agriculture. Of its manufactures that of iron is the most important; five blast furnaces and nine forges are in operation within the county. There are 47 flour and grist mills, a great number of saw-mills, and five woollen factories. Timber is very abundant, the numerous mountain ridges being covered with forest trees which supply the saw mills, the iron works, and fuel for domestic consumption. The sugar maple tree is common in many places, and a considerable quantity of sugar is made by the inhabitants for their own use.

The value of real and personal property, subject to taxation for county purposes, was assessed in 1842 at \$3,280,982: county tax, \$9,482; State tax, \$4,119.

This county has no canals or rail roads. The turnpike from Philadelphia to Pittsburg passes through it from east to west; and a little beyond the town of Bedford the turnpike to Somerset branches from it. The common roads, in such a mountainous region as this, are usually rough and in a state of but indifferent repair. Travelling in wheel carriages, except on the turnpikes or the more frequented roads, is unpleasant, difficult, and sometimes dangerous.

The advancement of popular education has been much neglected among the people of this county; but it is believed that within the last few years an increased attention to this subject is apparent. It is pleasing to observe that in this, as well as other parts of the State where the interests of education have hitherto received but little encouragement, an awakening spirit of improvement is manifest. An increase in the number, and an improvement in the character of common schools is the best evidence of a just appreciation of the benefits derived from a proper system of instruction.

Bedford county contains 25 school districts, of which 22 have

accepted the provisions of the school law, and 21 of these have made reports to the superintendent, showing the number of schools in operation to be 177, and that 13 are yet required. These schools are, however, taught but about five months in the year on an average; the children thus losing not only much of their time, but, with the easy facility of youth, forgetting while at home most of that which they had previously learned in school.

There is an academy in the town of Bedford, but it does not meet with sufficient encouragement to maintain it in a very flourishing condition.

Of the religious denominations in this county, the Methodists are most numerous; next are the German Reformed, Presbyterians and Lutherans. There are also some Baptists, Roman Catholics and Friends.

The inhabitants are mostly descendants of German and Irish families, some of whom settled here at an early day and encountered many of the dangers, difficulties and privations incident to the pioneers of civilization in a wild region; exposed to the incursions of hostile Indians and to the treachery and cruelty of savage warfare.

What are the boundaries of Bedford county? Describe the face of the country and the principal ranges of mountains. What is said of the streams? In what parts of the county is the lower limestone formation (II) observed? Where does the other limestone (VI) occur? Of what character is the coal of this county and where found? Iron ore? What is said of the soil? Of the climate? What is the county town and how situated? What is said of Bedford springs? How are M'Connellstown, Martinsburg and Shellsburg situated? What other villages in the county? What are the most important productions and manufactures? Mention the turnpikes and the condition of the common roads. What is said of the state of education and of the common schools? What are the prevailing religious denominations? From what people are the inhabitants mostly descended?

6. BERKS COUNTY.

Berks is bounded on the north-west by Schuylkill county, on the north-east by Lehigh, on the south-east by Montgomery, on the south by Chester, and on the south-west by Lancaster. Population 64,569.

The face of the country presents an agreeable variety of aspect, being in some parts mountainous or hilly, and in others undulating, diversified or level. The southern part of the county is traversed by that irregular chain of hills called the *South mountain*; and in the northern part are some ridges of considerable elevation. The *Blue* or *Kittatinny* mountain forms the northern line of the county, dividing it from Schuylkill. For variety and beauty of scenery this county is inferior to few in the State. The views from *Mount Penn* and *Neversink*, in the neighbourhood of Reading, present a varied and extended landscape, in which are harmoniously blended the different features of the woody mountain, the cultivated valley, the winding river, and the busy town, forming a picture which for richness and variety is seldom equalled.

The river *Schuylkill* flows through this county in a south-eastern direction, entering it through a gap in the Blue mountain above Hamburg, and passing by Reading becomes the line between Montgomery and Chester a few miles above Pottsgrove. Several of its large tributary creeks flow through Berks county, among the most considerable of which is the *Tulpehocken*, flowing eastward from Lebanon county through the western part of Berks, and emptying into the Schuylkill a little above Reading. *Maiden creek* is in the north-eastern part of the county, and flows southward to the Schuylkill six miles above Reading. *Manatony* creek in the south-east, runs southward and falls into the Schuylkill near Pottsgrove in Montgomery county. Some of the smaller creeks are *Sacony*, a branch of Maiden creek; *Northkill*, which falls into the Tulpehocken near Bernville; *Cacoosing* and *Spring* creeks, also branches of the Tulpehocken; and *Allegheny* and *Manokessy* creeks, which empty into the Schuylkill below Reading. All these, together with numerous smaller streams, furnish an abundance of water power for mills and manufacturing purposes, and their lesser branches supply the country with a sufficiency of water for the wants of agriculture.

The geological character of the county is various in its different parts. On the southern border is the red shale of the middle secondary series; in the upper or northern portion of this red shale the calcareous conglomerate rock called Potomac marble is abundant in several places, particularly near the Schuylkill below Reading. North of this are the hills of the South mountain range, which contain gneiss, sienite and other primary rocks, together with the hard whitish sandstone which overlies the primary. Several of the little valleys interspersed between these hills contain irregular belts of limestone. Northward of this chain of hills is the great limestone formation of the Kittatiny valley, which extends along its south-eastern side from the Delaware river to the Maryland line; and adjoining it on the north, reaching to the Blue mountain, is the slate formation next in position above the limestone, which is equally extensive in its range. At several places in Berks county the limestone contains belts of slate of considerable thickness, and in the neighbourhood of Bernville and Womelsdorf the limestone and slate formations appear to have no distinct line of division, but alternating strata of both are found. A dike of trap rock extends northward across the limestone, east of Sinking spring, crossing the Tulpehocken near the mouth of Cacoosing creek, and extending northward into the slate region.

Iron ore occurs in several parts of the county. At Mount Pleasant, in Colebrookdale township, the magnetic variety of ore has been mined to some extent, and is found in other places connected with the primary rocks. In Oley township, and near Boyerstown, are mines which were formerly worked for the supply of furnaces in that neighbourhood. Brown argillaceous iron ore occurs near Kutztown, and at Moselem it is extensively mined, as also near the Lebanon turnpike about eight miles west of Reading. A rock yielding hydraulic cement of good quality is found near the Schuylkill, from which that article is manufactured in considerable quantity for use. Copper ore occurs at several places within the county, but generally in such small quantity and so mixed with iron as to render the expediency of working it very doubtful. Near Morgantown is a mine of this character, which is not at present in a productive state.

The soil of Berks county is generally of good quality. About one-third of it is limestone land which is highly fertile and well cultivated. The red shale soil in the southern part of the county

is also favourable for agriculture, and many fine farms show its productive character when well tilled. The hills of primary rock are covered by a soil which, though rough and stony, is tolerably fertile, and if well farmed abundantly repays the labour of cultivation. In the slate region between the limestone and the Blue mountain, the surface is rolling and hilly, with a soil of moderate fertility, being most productive where the slate is calcareous, or contains thin bands of limestone.



View of Reading.

Reading, the county town, is a flourishing place containing 8,410 inhabitants. It is beautifully situated on a sloping plain between Penn's mount and the eastern bank of the Schuylkill; 52 miles north-west from Philadelphia and the same distance east of Harrisburg. The streets intersect each other at right angles; those most used are regularly graded and are covered with a hard white gravel, derived from the sandstone of the mountain east of the town, which forms a very compact, smooth, and durable road, superior to most paved or Mac Adamized streets.

Several of the public buildings are large and handsome edifices. The new court house, finished in 1840, is superior to most others in the State. It is built of brick, with a noble portico of sandstone in front; and standing on elevated ground has an imposing aspect, commanding a view of the whole town and much of the surrounding country. The German Lutheran church is a large and handsome structure, said to be sufficiently capacious to contain a congregation of 1,500 persons. It is surmounted by a steeple 201 feet in height, one of the highest in the State. The German Reformed church, erected in 1832, is of brick, and has a steeple 151 feet high.

In addition to these there is a Presbyterian, an Episcopal, a Catholic, a Methodist, a Baptist, and a Universalist church, with an ancient Meeting House for Friends, built of logs in 1766, and three African churches. There are two market houses, in which market is held twice a week; and 32 hotels and taverns in the borough. Seven weekly papers are published here, three of which are in the German language.

Reading was formerly celebrated for the manufacture of wool hats, and the business is still carried on extensively; but of latter years other branches of manufactures have so much increased as to have given this ancient trade but a secondary rank. Previous to 1836, hats, boots, shoes and stone ware were the principal manufactures; since that time establishments have been put in operation for rolling iron, making nails, casting in iron and brass, manufacturing locomotive and stationary steam engines, rifle barrels and augers;—a steam saw and chopping mill, and several shops for the manufacture of thrashing machines, corn shellers, ploughs and other agricultural implements. There are also two flour mills in the borough, one of which is said to manufacture 8000 barrels of flour annually.

The town is supplied with excellent water from a spring on the side of Penn's mount, which is conducted into a reservoir near the head of Penn street, from which it is distributed through the town by means of iron pipes.

Womelsdorf is an incorporated borough, containing 849 inhabitants, situated 14 miles west of Reading on the turnpike to Lebanon.

Kutztown is also a borough, in the eastern part of the county, 18 miles from Reading, on the road to Allentown and Easton. Population 693.

Hamburg is situated on the eastern side of the Schuylkill, 15 miles above Reading.

Morgantown is in the southern corner of the county, near the Lancaster county line.

Besides these there are many other places of some note, such as Mertztown, Pricetown, Stouchburg, Rehrersburg and Bernville.

Of the productions of this county, those of agriculture are by far the most important and employ the greatest number of persons. Large quantities of different kinds of grain are cultivated; hay and potatoes are abundantly produced, and great numbers of horses, cattle, sheep and swine are raised by the farmers.

It has been already mentioned that iron ore is mined in many places within this county, and 10 blast furnaces and about 30 forges and rolling mills have been erected and put in operation for the manufacture of iron. Limestone is abundant, and is converted into lime for the use of this and the neighbouring counties, to which it is sent by the canals, and rail road. The surplus productions are chiefly conveyed by the Schuylkill canal and Reading rail road to the Philadelphia market.

Timber of the usual kinds found in this part of the State is abundant, and supplies the saw mills with material for lumber for home consumption, besides affording charcoal for the iron works and abundance of fuel for domestic use.

According to the assessment for 1842, the value of real and personal property subject to county taxation amounted to \$20,679,857: the county tax levied upon which was \$41,540, and the State tax assessed in the autumn of 1841, \$27,769.

The Schuylkill canal and the rail road from Philadelphia to Pottsville both pass through this county from south to north, and afford an easy and convenient means of communication with the city, as well as unusual facilities for the transportation of produce to market and of merchandise in return. The Union canal leaves the Schuylkill near Reading and passes up the Tulpehocken into Lebanon county, furnishing to the western part of Berks the convenience of canal navigation, both eastward to the Schuylkill and westward to the Susquehanna. These canals not only afford the means of transportation and trade to the people of the county, but also create a considerable home market to the farmers for the sale of different kinds of provisions for the boatmen and their horses.

There are several good turnpike roads in this county. That from Philadelphia to Pottsville passes through Reading and Hamburg; and that from Reading to Harrisburg extends westward by Womelsdorf and Stouchburg towards Lebanon. The common roads are kept generally in good condition for travelling; bridges are erected over the principal streams, eight or ten crossing the Schuylkill at different places within the county. Two of these are at Reading, one of which is about 600 feet in length.

The general state of education among the people of this county is not flourishing. The early settlers were chiefly of the labouring classes from Germany, who in their own country had enjoyed very limited means for the acquisition of knowledge, their youth having been passed in the hardship and privation of incessant labour. Being a people generally averse to innovation, and strongly prejudiced in favour of old usages and habits, they have since, with some very creditable exceptions, practically maintained the principle that as the father has lived and made money without education, so may the son. Honest, industrious, and rigidly economical in his habits, the Pennsylvania German regards a liberal education as being rather the accomplishment of a rogue than the necessary qualification of a useful citizen; and would therefore save his money for what he considers a more useful purpose than the education of his children. It is, however, gratifying to observe that of latter years such principles are gradually, but perceptibly, yielding to more liberal views and a more just appreciation of the benefits and advantages of education.

To such causes and opinions we may attribute the inferior condition of the common schools in this county. Of its 35 school districts only eight accepted the provisions of the law in 1835, and since that time two of them have discontinued. In many instances there has been much opposition to collecting the school taxes, building school houses, and making any improvements involving cost. The want of good teachers has been felt here, as in many other parts of the State; but it is believed that there is a general improvement in the schools as well as in the disposition of the

public mind on this subject. The number of schools in operation under the system is 44, which are kept open on an average about 6½ months in the year.

There are three academies in the county: one at Reading, one at Womelsdorf, and one at Kutztown. That at Reading was incorporated in 1778, but owing to injudicious management and want of patronage, it was suspended in 1836. It was revived, however, in 1840, and has since sustained a deservedly high character. The course of instruction is extensive, embracing the ancient and modern languages, mathematics and the other branches usually taught in academies and high schools. The number of its pupils is 64. The Reading Female Seminary was incorporated in 1838, and by the wise and liberal policy of the trustees, suitable provision has been made for procuring the services of competent instructors in the English and French languages and literature, botany, chemistry, natural philosophy and other useful as well as ornamental branches of female education. The institution is accordingly in a prosperous state, and has already acquired a reputation which brings to it pupils from abroad. Its present number is 62.

The common language of the county is the impure German usually spoken in Pennsylvania, and which has become so much corrupted and mixed with common English words, that it would scarcely be understood by a well educated German from the fatherland. In many parts of the county, where the inhabitants seldom leave their own neighbourhood, English is neither spoken nor understood; but this language is rapidly gaining ground among those of the people who have business communications with others than their immediate neighbors. It will probably not be long before English and German will be equally used, except in some secluded portions of the county.

Among the natural curiosities may be mentioned Dragon's cave, in Richmond township, which is thus described by a gentleman resident in the county. "The entrance to this cave is on the brow of a hill, in the edge of a cultivated field. Passing into it the adventurer descends about fifty yards by a rough and narrow passage, and then turns to the left at an acute angle with the passage hitherto pursued. After proceeding about thirty yards farther he enters the great chamber, about fifty feet long, twenty wide, and fifteen to twenty feet high, in a rock of limestone. Near the end of this chamber, opposite to the entrance, is the "altar," a large mass of stalagmite, which rings under the hammer, and is translucent. Formations of stalactite are found in other parts of the cave, though none so large as the mass just mentioned."

Sinking spring, near the Harrisburg turnpike, about 5 miles west from Reading, is a considerable curiosity to those who are not familiar with the circumstances frequently attending large springs in a limestone region. The water here rises and sinks again in the same basin, which is very deep; thence finding its way again under ground through fissures and hidden caverns in the limestone rock, probably once more to seek the light of day in some other place.

Name the counties adjacent to Berks. Describe the face of the country and mention the mountains in this county. What river flows through it, and in what direction? Name the other principal streams, their situation and course. What kind of rock is in the southern part? In the South mountain? Where are the great limestone and slate formations? Mention the places where iron ore occurs. What other mineral productions are found? What is said of the various kinds of soil? What is the county town and how situated? Describe the principal public buildings. For what branch of manufacture was Reading formerly celebrated? What manufacturing establishments are now in operation? How is the town supplied with water? Where is Womelsdorf? Kutztown? Hamburg? Morgantown? What other towns are mentioned? What are the most important productions? The number and kind of iron works? What is said of the limestone and timber? Name the canals and rail roads in this county. What is said of the turnpike roads and bridges? What circumstances are mentioned as having retarded the progress of education? What is said of the number and condition of common schools? Of the academies? What language is commonly spoken? What natural curiosities are mentioned?

7. BRADFORD COUNTY.

Bradford county has the state of New York on the north, the county of Susquehanna on the east, Wyoming on the south-east, Lycoming on the south, and Tioga on the west. Its population, according to the last census, is 32,769.

In its general aspect this county is a broken and hilly rather than a mountainous region; with a surface frequently rough and rocky, and a soil of but moderate fertility, except along some of the streams, where there are tracts of alluvial land which are very productive.

The *Susquehanna* and *Tioga* rivers both enter this county from the state of New York, and unite at Tioga Point, below the town of Athens, about five miles from the state line. From this point the *Susquehanna* flows south-eastward through Bradford county until it enters Wyoming. The other principal streams are *Towanda* creek, which runs north-eastward to the *Susquehanna* below the town of Towanda; *Sugar creek*, further northward; and *Wysox* and *Wyalusing* creeks in the eastern part of the county. There are many other streams of sufficient size to supply water power for saw mills and other establishments.

A great portion of this county presents very little variety or interest in the geological character of its rocks. They chiefly consist of nearly horizontal strata of sandstone, intermixed with slates and shales (VIII and IX,) with some bands of impure limestone, frequently containing fossil shells, and which in some places is sufficiently pure for burning into lime. Some of the hills in the southern part of the county, 10 or 12 miles south-westward from Towanda, are capped by the rocks of the coal formation, in which are two beds of bituminous coal, one said to be three and the other five feet in thickness, and near them are iron ore and fire clay. Preliminary surveys have been made for a rail road from Towanda to these coal mines.

Towanda, the seat of justice, is a thriving town situated on the North branch of *Susquehanna*, nearly in the centre of the county. Population of the borough 912. It contains the usual county

buildings, consisting of a court house, prison, &c., also a bank, an academy, and several places of public worship. There is a neat and substantial bridge across the river at this place. *Athens* is also on the Susquehanna, about 15 miles north of Towanda. Several other villages of minor importance are contained within the county.

In this newly settled region the productions of agriculture are neither so valuable nor so extensive as in the older counties. Most of the cereal grains are, however, successfully cultivated, and the soil is admirably adapted to the production of oats, grass, and potatoes. Lumber to the amount of near \$250,000 is annually produced from the forests, which is mostly floated down the Susquehanna to a market. The number of saw mills in the county is 213. Pine, hemlock, and sugar maple trees abound in the forests, and from the latter sugar is manufactured annually amounting to upwards of 190,000 pounds.

The North branch division of the Pennsylvania canal, which is not yet completed, passes across nearly the whole breadth of this county and terminates at the northern line of the State, where it is intended to connect with the public improvements of the state of New York. It will, when finished, be of great importance to the trade of this region, as a means of transportation either north or south for the products of the county.

Bradford is mostly settled by emigrants from New England, or their descendants, and the people are generally distinguished for their morality, intelligence, and attention to education. There are 31 school districts in the county, in all of which, except one, the common school system is in full operation. The number of schools reported is 238, which are kept open for instruction during an average of about 6½ months in the year. The academy at Towanda is reported to have about 80 pupils, of whom ten are undergoing a course of instruction intended to qualify them for teachers.

Describe the boundaries of Bradford county. Its general surface and the character of the soil. What are the principal rivers? Large creeks, their situation and course? What is said of the rock formations? Where is coal found? What is its character, and what other minerals accompany it? Name and describe the county town? What other place is mentioned and where situated? What are the most important productions? What is the amount of lumber produced? Of maple sugar? What canal is in this county, and what is said of its importance? By whom is the county chiefly settled? What is said of education, and of the common schools?

8. BUCKS COUNTY.

In its general outline this county is nearly in the form of a parallelogram, having its greatest length from north-west to south-east, about 40 miles, with an average breadth of 15 miles. It contains an area of 366,746 acres, or a little more than 573 square miles. The population in 1840 was 48,107.

Bucks county is bounded on the north-east and south-east by the Delaware river, which separates it from New Jersey; on the

south-west by Philadelphia and Montgomery counties; and on the north-west by Lehigh and Northampton.

The *Delaware* river runs along the eastern border of the county, in a south-eastern direction, for about 46 miles, where it bends to the south-west and runs sixteen miles further to the mouth of Poqueston creek, which is the boundary between Bucks and Philadelphia counties. This river is navigable for steamboats and vessels of light draught to the lower falls or rapids at Trenton, which is the head of tide water. Lumber is rafted on the river from New York state to Philadelphia, and large quantities also pass from the country on the upper Lehigh down the canal to Bristol.

The *Neshaminy* is a large stream which rises in Plumstead township and runs south-westward about eight miles; then turning to the south-east it passes through the southern interior of the county, and empties into the Delaware a few miles below Bristol. This stream affords many valuable mill seats.

Tbthickon creek rises in the north-western part of the county, and after a winding course of about 30 miles, falls into the Delaware at Point Pleasant, above Black's Eddy.

The north-east branch of *Perkiomen* has its source in Bedminster township, flows south-westward into Montgomery county, and discharges its waters into the Schuylkill.

In addition to the above named streams, the county is well watered by numerous smaller creeks and rivulets, which, wherever practicable, are improved to furnish power for mills and manufacturing establishments.

A very large spring rises in Solebury, a few miles west of New Hope, which was called Aquetong by the Indians; now known as "Ingham's spring." The water flows out in a cove or hollow, near the junction of the red shale and limestone rocks, and like most other large springs maintains a nearly equal temperature throughout the year, seeming remarkably cold in summer and seldom or never freezing in winter. The quantity of water which this spring pours forth, is supposed to be sufficient, with 18 or 20 feet fall, to turn two grist mills throughout the year; and there are five good mill sites on the stream, between the spring and where it empties into the Delaware at New Hope, a distance of two and a half miles.

The lower end of this county is occupied by gneiss and other primary rocks, the northern limit of which extends from the Delaware above Morristown, in a western direction across the county, passing a little north of Attleborough and Rockville, and reaching the Montgomery county line near the north-west corner of Southampton township. North of this the primary rocks are overlapped by the middle secondary red shale and sandstone formation, which occupies most of the remainder of the county. Ridges and dikes of trap rock are frequent, several of which run westward from the Delaware below New Hope. Others of considerable extent occur in the townships of Haycock and Rockhill. As is usual in this formation, we frequently find the red shale in the vicinity of the trap hills entirely altered in colour and texture; being changed into a hard, compact blue or purplish rock, possessing little of its original character except its uniformity

of dip and stratification. This change has probably been effected by the heat of the trappean matter which has found its way in a state of fusion through the dislocated red shale. Some elevated ridges of the altered blue rock are seen, remote from any outburst of trap rocks, in which the change may be attributed to masses of *unerupted* trap beneath them, which has never reached the surface; but whose heating influence has been sufficient thus to modify the overlying strata.

The isolated ridge called Buckingham mountain appears to be an upheaved mass of the sandstone (I) which lies next above the primary rocks. On the north of it we accordingly find a limestone (II,) which is the next rock in order above this sandstone, and which extends in a narrow belt from the Delaware above New Hope, south-westward to a point beyond Centreville, where it disappears, being overlapped by the rocks of the red shale series. Other valuable belts of limestone occur in Durham and Springfield townships, south of the primary rocks of the Lehigh hills or South mountain.

In Southampton township, on the farm of George Vanartsdalen, near the road from the Buck tavern to Attleborough, is a small bed of primary limestone, in which are found *Labrador feldspar*, *plumbago*, *sulphuret of iron*, *tabular spar*, *scapolite*, *augite*, *oxide of titanium*, *moroxite*, and other mineral combinations. Between this and the village of Smithfield is a locality where *plumbago* or *black lead* occurs in considerable quantity, which was formerly mined to some extent, but is now neglected. In the gneiss near the bridge at Rockville, crystals of *zircon* are found. *Sulphate of baryta* occurs in abundance near the north-west corner of Upper Makefield township, and also near Ingham's spring in Solebury, at both of which places it has been dug for use within a few years. The altered rocks near the Delaware below New Hope contain crystals of *tourmalin* and *epidote*. *Magnetic iron ore*, of tolerable purity, is found in Durham township, where it was formerly used for the supply of a furnace in the neighbourhood.

In the same township there is a remarkable cave in the limestone rocks, the entrance to which is about 100 yards from the river. The height of the eminence enclosing the cavern is from 200 to 250 feet above the level of the adjoining land. From the pathway of the entrance, to the rock above, is upwards of 40 feet, but the passage, being partly obstructed by rocks, will not admit more than two or three persons to enter abreast. The interior is lofty and consists of three spacious rooms; the passage from one to the other is over steep and prominent rocks. The first apartment is entered by a descent of about 30 feet. The floor of the second room is lower than the first; and that of the third is still lower, in the bottom of which is a spring of excellent water, supposed to communicate with the creek or river. The entire length of the cavern from north to south is about 90 yards.

In quarrying limestone, a little to the east of the entrance to this cave, an opening was made into another running parallel with it; and which, though not so wide, is of the same length. This abounds with white stalactites, and probably communicates with the other.

The limestone tracts in this county are highly valued, and lime is extensively used as a manure for agricultural purposes, as well as for building, &c. In addition to that which these afford, large quantities of limestone and lime are brought down the canal from the neighbourhood of Easton, for the supply of the lower part of the county; the stone being burned in kilns near the canal, and the lime sold at 10 and 12½ cents per bushel. Building stone is abundant in most parts of the county: some of the sandstone strata in the red shale formation are peculiarly excellent, and may be dressed and cut into any desired form, affording a handsome and durable material for walls, bridges, canal locks, &c.

The soil is generally good, and in no part of Pennsylvania is agriculture better understood and practised than in the middle and lower parts of Bucks county. Great attention is paid to the careful tillage and improvement of the soil, and the farms and buildings generally exhibit that love of neatness, order and convenience which is characteristic of the judicious and industrious agriculturist.

The climate of course resembles that of the other south-eastern counties of the State. The mean annual temperature is about 51° —that of the winter 29 or 30° , and of summer 71 or 72° . The greatest cold is seldom as low as 0° , and the greatest heat 90 to 92° . With regard to the changes and variations of climate in this part of Pennsylvania, we may say with Dr. Rush, "We have no two successive years alike. Even the same successive seasons and months differ from each other every year. There is but one steady trait, and that is, it is uniformly variable."

Doylestown has been the county town since 1812. It is situated 24 miles due north from Philadelphia, upon an eminence commanding an extensive view of a region of country remarkable for its beauty, fertility and salubrity; and the town, for neatness and order, is surpassed by few in the State. It contains a court house, county offices, and prison, situated in the centre of the town, and surrounded with a park adorned with trees. The other public buildings are a bank; three houses for public worship, belonging to Presbyterians, Friends, and Methodists; a female seminary, and an academy. There are also several literary societies and a library company. Four weekly newspapers are printed here, two in the English and two in the German language. The borough and township contain about 2000 inhabitants.

Bristol is a port of entry situated on the Delaware, 20 miles above Philadelphia, and 10 below Trenton, being nearly opposite to Burlington in New Jersey. The town is neat and cleanly, and presents a beautiful appearance when viewed from the river. The public buildings are a town hall, with a market attached, a bank, an Episcopal church, one Methodist and two Friends' meeting houses, and a spacious brick school house erected expressly for common schools.

The Delaware division of the Pennsylvania canal terminates at Bristol in a large and beautiful basin. The Lehigh, Beaver Meadow and Hazelton Coal Companies have severally established their depots here, which, together with other produce descending the canal, make it a place of considerable commercial importance. The population in 1840 was 1,448.

New Hope is pleasantly situated on the Delaware, 31 miles from Philadelphia, and 11 from Doylestown. It is opposite to Lambertville in New Jersey, with which it is connected by a fine bridge across the river. It contains 820 inhabitants, and has an academy, a lyceum and a Methodist church. A company is established here for the manufacture of Ball's patent door locks, and a number of mills and factories are in the town and its vicinity. The Delaware division of the State canal passes through

the town, affording facilities for considerable trade and business. The scenery in the vicinity is picturesque, and the town is environed by several hills of considerable elevation.

Newtown, *Attleborough*, *Yardleyville*, and *Morrisville* are also considerable villages, increasing in size and importance. Many other thriving villages are situated in various parts of the county. The Bucks county almshouse is in Warwick township, about three miles south of Doylestown. It is a capacious building, having a large farm attached, and is admirably situated for health and agreeable scenery.

Bucks county is chiefly an agricultural district and the farms are highly improved. The principal productions are wheat, rye, Indian corn, oats, buckwheat, butter, pork, poultry, various fruits and other articles for home consumption, and the supply of the Philadelphia market.

The manufacturing establishments are numerous, and some of them extensive. There are 11 flour mills, 94 grist mills, 80 saw mills; several woollen and cotton factories, a number of iron foundries and establishments for the manufacture of carriages, wagons, and agricultural implements; and various other branches of mechanical industry are successfully pursued.

The prevailing growth of timber is chiefly various kinds of oak and hickory, chestnut, ash, poplar, and other useful trees; but in a country so generally under cultivation, timber cannot be said to be abundant.

The estimated value of real and personal property assessed for county purposes in 1842 was \$17,004,945; county tax \$33,643; State tax \$25,477.

There are several excellent turnpike roads in this county. The Doylestown and Willow Grove turnpike connects with the Cheltenham turnpike, and forms the most direct communication with Philadelphia. The Bethlehem turnpike touches the county at Lexington and runs about 2½ miles on the county line. The Philadelphia and Trenton turnpike passes through Bensalem, Bristol, and Falls townships, a distance of 17 miles. An extension of the Philadelphia, Bustleton, and Smithfield turnpike is now in a course of construction as far as the Buck tavern, in Southampton township, and will probably be made to Newtown in a few years. Some others are about to be constructed to connect with the Doylestown turnpike, in order to facilitate the transportation of produce to market. The common roads are generally kept in good repair.

The Philadelphia and Trenton rail road is the only one in the county, passing through it about 17 miles.

The Delaware division of the State canal follows the windings of the river along the eastern border of the county for 53 miles, and terminates at Bristol.

There are eight bridges crossing the Delaware within the limits of this county, viz: the Trenton, Yardleyville, Taylorsville, New Hope, Centre, Alexandria, Milford, and Rieglesville bridges. Every bridge on the Delaware, except that at Trenton, was car-

ried away by the great freshet on the 8th of January, 1841; but they have since been rebuilt.

County bridges across the Neshaminy and other streams are numerous, chiefly constructed of stone, and well built.

The state of education among the people at large, though perhaps equal to that in most counties of the commonwealth, is nevertheless much inferior to what it ought to be, in a community so well able to support it. The condition of the common schools generally calls loudly for reform. The county contains 33 districts, of which only 13 had accepted the school law in 1842, and have 65 schools in operation. The non-accepting districts are chiefly in the upper part of the county. There are 151 school houses, which are generally built of stone; and the schools are open on an average about 9½ months in the year.

There is at present no collegiate institution in the county, the Bristol college having been discontinued. There is an academy at Attleborough, one at Newtown, and one at Doylestown. At the latter place is a flourishing female seminary, incorporated by act of Assembly in 1838.

English is the general language of the middle and lower parts of the county; but in the upper section German is commonly spoken.

The number of churches and religious denominations in this county are as follows: Friends 18, German Reformed 11, Methodists 11, Mennonists 11, Lutherans 9, Presbyterians 9, Episcopalians 5, Baptists 4, Christians 2, Catholics 1, Free 1. Total 82.

Bucks was one of the three original counties erected by William Penn in 1682. Previous to the arrival of Penn's colony, there was a considerable settlement of English Friends in this county near the lower falls of the Delaware, who had grants of land there from Sir Edmund Andross, then governor of New York. The southern and interior parts of the county were settled mostly by English and Welsh Friends, and the northern by Germans.

William Penn had a large mansion house erected on his manor of Pennsbury near the bank of the Delaware, a few miles above Bristol, the ruins of which are still visible. It was undertaken before his arrival and intended for his reception. Here he afterwards sometimes resided, and held meetings and conferences with the Indians. In 1701 he held a great Indian council to renew their covenants and take leave of them.

A town was surveyed and laid out in Pennsbury manor by Phineas Pemberton, which was intended to have been Philadelphia; but the people who went there were dissatisfied with the location, and it was abandoned.

The Indian tribe which was originally in possession of the land comprising this county, belonged to the nation of Delawares, and were called *Neshaminies*, from the principal creek about which they had their residence. The remains of the renowned king Tamané, a celebrated Indian chief, lie buried on Prospect Hill farm, 4 miles south-west of Doylestown. His grave is in a beautiful spot by the side of a spring which flows into Neshaminy creek.

"And since the chieftain there has slept,
Full many a winter's winds have swept,
And many an age has softly crept
Over his humble sepulchre."

The last remains of the Delawares, under their leader Isaac Still, a celebrated Indian of some education, removed from Bucks county about the year 1775, to go, as they said, "far away from war and rum," to the Wabash.

We find in the records of the old provincial council of 1683, an order that the seal of Bucks county should be a "Tree and Vine."

In 1684, John Chapman came over from England and settled in Wrightstown. His place at that time was the farthest back in the woods of any English settlement; and the Indians, being numerous, frequented his house in great numbers and were very kind to him and his family, as well as to those who came after him; often supplying them with corn and other provisions, which in those early times were very scarce.

In 1697, the present site of Bristol, which was then called Buckingham, was surveyed and laid out as a market town by Phineas Pemberton, the surveyor general. This was for a time the seat of justice for the county, which was afterwards removed to Newtown, and subsequently in 1812 to Doylestown, where it still remains. James Harrison was the first chief justice of Bucks, and Phineas Pemberton was clerk of the court. As members of the early provincial councils, and holding other public trusts in this county, we find the names of William Yardley, William Biles, John Swift, Thomas Janney, William Paxon, Thomas Jenks, Joseph Kirkbride, Thomas Watson and others, many of whose descendants are to be found at the present day among the most respectable inhabitants of the county.

One of the earliest seminaries of learning in the State was instituted about the year 1728, in Warminster township, by the Rev. William Tennent, an emigrant from Ireland. It was more especially intended for the education of ministers for the Presbyterian church. From its celebrity and the materials of which it was constructed, it received the popular name of the "Log College." This institution continued to flourish for some time, and was the means of forming a number of good scholars and distinguished professional characters.

The great *Indian walk* makes a conspicuous figure in the history of this county. We are indebted to the reminiscences of the venerable Samuel Preston, as published by him in the Bucks County Patriot in 1826, for the following account of it. "It appears that in 1732, Thomas Penn, son of William Penn, came over as proprietary and remained about two years. He contracted with Teedyuscung, a noted and pretended chief, for the Indian title to all the land to be taken off by a parallel of latitude from any point as far as the best of three men could walk in a day between sunrise and sunset, from a certain chestnut tree at or near Bristol, in a north-west course. (Other traditionary accounts say this tree was

near Wrightstown, which is more probable.) Great care was taken to select the most capable men for such a walk. The reward was five pounds in money and 500 acres of land any where in the purchase. The choice fell upon James Yeates, Solomon Jennings and Edward Marshall. This Marshall was a native of Bucks, a stout athletic man, famous as a hunter, chain carrier, &c. One of the longest days in the summer of 1733 was appointed, and the champions notified. The people collected at what they thought the first 20 miles, on the Durham road, to see them pass. First came Yeates, stepping lightly, accompanied by Thomas Penn and attendants on horseback. After him, but out of sight, came Jennings with a strong and steady step, and yet farther behind, Edward Marshall, apparently careless, swinging a hatchet and eating a dry biscuit: bets ran in favour of Yeates. Marshall carried the hatchet to swing in his hands alternately, that the action in his arms should balance that of his legs. He was determined to win, or die in the attempt. Yeates gave out near Durham creek. Marshall kept on, and before he reached the Lehigh he overtook and passed Jennings—waded that river at Bethlehem, and hurried on, by the spot where Nazareth now stands, to the Wind Gap. That was as far as the path had been marked for them to walk on, and there was waiting the last collection of people to see if any of the walkers would reach it by sunset. Marshall only halted for the surveyor to give him a pocket compass, and started on again. Three Indian runners were sent after him to see that he walked fairly, and how far he went. He then passed to the right of Pocono mountain, till he reached Still-water. There he marked a tree witnessed by three Indians. The distance he had walked between sunrise and sunset, not being on a straight line, and about 30 miles of it through the woods, was estimated at about 110 miles. Yeates died in three days afterwards; Jennings' health was so much impaired that he died in a few years; but Marshall lived to the age of 90 years at his residence on Marshall's Island in the Delaware opposite Tinicum." Mr. Preston states that he received this account from the lips of Marshall himself.

A parallel of latitude from Still-water would have cut off all the valuable possessions of the Indians to the westward; and they, becoming alarmed, denied the right of Teedyuscung to enter into such a contract. It created great uneasiness, and they threatened war, before they would consent to such a bargain. In the midst of these perplexities, Thomas Penn returned to England, and his elder brother, John Penn, came over, who, on becoming acquainted with the facts of the case, revoked the contract. This was wounding to the pride of Teedyuscung, who thus had gained nothing in the transaction; and being a man of treacherous, cruel, and malicious disposition, he created a hostile feeling among the Indians towards the whites. Marshall never obtained the promised reward for his great exploit, and his family was the first to feel the Indians' vengeance. Thus the "Indian walk" may be considered as the prime cause of rupture in the harmony which had so long subsisted between Penn's colony and the natives.

In the war of the Revolution this county was frequently traversed by American and British troops; and although we can point to no battle fields within its borders, it is not left without a witness of "the times that tried men's souls." When Washington boldly determined to attack the British in their winter quarters at Trenton, he selected M'Konkey's ferry, now Taylorsville, about eight miles above Trenton, as the most favourable point for crossing the Delaware. Accordingly, on the night of Christmas, 1776, a night of intense cold, with a storm of mingled snow, hail, and rain, the river being covered with floating ice, he crossed the Delaware, arrived at Trenton soon after sunrise, and surprised the British and Hessian forces, who after a brief struggle surrendered themselves as prisoners of war, to the number of about 1,000 men, with all their military stores.

What is the extent of Bucks county, and how bounded? Describe the course of the Delaware. The other principal streams. What is said of a remarkable spring? What kind of rocks occupy the lower end of the county? What formation lies on the north of them? Where are the principal ridges of trap rock? In what parts of the county is limestone found? What minerals occur in Southampton, and in other places mentioned? Describe the Durham cave. What is said of the soil and of agriculture? Of the climate? Name the county town, and describe its situation, public buildings, &c.. How is Bristol situated, and what is said of it? New Hope? What other villages are mentioned? Where is the county poor-house? What are the principal agricultural products? Manufactures? Mention the several turnpike roads. What rail road and canal are in this county? What large bridges? What is said of the state of education, and of the common schools? Academies? Principal religious societies, and number of places of worship? When was this county established, and by whom originally settled? Where was William Penn's mansion house? What tribe of Indians inhabited this part of the country? In what year was a settlement commenced at Wrightstown? When was Bristol laid out as a market town? What early seminary of learning was founded in this county? Relate some particulars of the famous Indian walk in 1733. What was the consequence? What leading incident of the revolutionary war is connected with this county?

9. BUTLER COUNTY.

Butler county is bounded by Venango on the north, Armstrong on the east, Allegheny on the south, and Beaver and Mercer on the west. Population 22,378.

The face of the country is diversified by a succession of hills and valleys, forming a rolling or undulating surface.

No river passes through this county, but the *Allegheny* touches the north-east and south-east corners. Numerous smaller streams intersect it in almost every direction, the principal of which are the *Conequenessing* in the southern, and *Slippery-rock* and *Muddy* creeks in the northern part, all of which flow westward towards Beaver river. The county is well watered by the numerous branches of these streams, and in the eastern part by some of the smaller tributaries of the Allegheny river.

Bituminous coal abounds in almost every part of the county,

and in the middle and northern portions, iron ore of good quality is found in sufficient abundance to render it worthy of prominent consideration among the natural resources of this region. Several strata of limestone occur in different parts of the county, furnishing an inexhaustible source of improvement to the soil, as well as yielding a supply of lime for architectural purposes and use in the arts and manufactures.

A large proportion of the soil is rather of a sandy character and but moderately productive; in the southern part of the county it is more loamy and of greater fertility. Springs of pure water are abundant, and the climate is noted for its salubrity.

Butler, the county town, on the Conequeenessing creek, is situated on high ground, and commands an extensive and picturesque view of the surrounding country. The court house is a handsome brick edifice, occupying an elevated and commanding situation; the other public buildings are a substantial prison, an academy, and several well-built churches. The borough is incorporated and contains a population of 861. *Harmony* and *Zelienople*, in the south-western part of the county, are flourishing towns, beautifully situated in the valley of Conequeenessing creek, and mostly inhabited by intelligent and enterprising Germans. The county contains a number of other flourishing villages, among which are Centreville, Harrisville, Fairview and North Washington in the north; Prospect and Portersville in the middle; and Woodville and Evansville in the south.

The principal agricultural productions are wheat, rye, buckwheat, oats and some Indian corn, with live stock of various kinds. Several enterprising farmers have recently turned their attention to the production of silk, and with considerable success. This county has three furnaces for the manufacture of iron, some woollen factories, numerous grist and saw mills, and several oil mills.

The timber chiefly consists of various kinds of oak, chestnut, and some white and black walnut, affording an abundant supply for domestic use; but little of it is taken to market.

The assessed valuation of property in 1842 was \$2,573,116; State tax \$2,820.

Several graded roads called turnpikes, though not covered with broken stone, and hence having the distinctive name of "clay pikes," cross the county in different directions. One of these leads from Pittsburg to the town of Butler, and thence extends north-westward to Mercer, in Mercer county. Another of similar character leads from Freeport to Butler, and one from Harmony to Butler. These roads are excellent for travelling when the ground is hard; but in the early part of spring, and when the soil is saturated with moisture, they become almost impassable. There is also a graded State road from Butler to Franklin, which being principally located on the ridges of high land between those places, and on a more gravelly soil, is not subject to be so much affected in consequence of the frost leaving the ground in the spring.

Butler county contains 17 school districts, all of which have accepted the provisions of the law regulating the common school

system, and in which 139 schools are reported as being in operation, taught on an average nearly five months in the year. In the academy at Butler about 50 pupils are instructed, and in the same town is also a female seminary with nearly an equal number.

Of the various religious persuasions, the Presbyterians, Methodists, Seceders, and Roman Catholics are the most numerous; there are also some German Reformed, Lutherans and Universalists.

This county was originally included in Westmoreland, which then embraced most of the territory of Pennsylvania west of the mountains. Two districts of "donation lands," most of which lie in Butler county, were surveyed as early as 1785; but few settlements were made until 1796. The early settlers endured great hardship and privation, being obliged to transport most of the necessities of life on pack horses from the older settlements. Salt was brought in this way from the country east of the mountains, and was sometimes sold as high as \$18 per bushel; while at present more than half a million of bushels of this article are produced in the adjoining counties. The first white inhabitants were mostly emigrants from the eastern part of the State, and their numbers were increased by many natives of Ireland and Germany, whose descendants form a considerable portion of the population.

How is Butler county bounded? What is the character of the surface? What river touches the county, and what are the other principal streams? What valuable mineral productions occur? What is the character of the soil and climate? What is the name of the county town, and what are its public buildings? Where are Harmony and Zelienople? What other villages in different parts of the county? Mention the principal agricultural productions. What are the iron works and other manufacturing establishments? What are the prevailing kinds of timber? What is said of the roads? Of the schools and academies? Name the principal religious denominations. To what county did Butler originally belong? What is said of the hardships and privations of the early settlers? Whence came the first white inhabitants?

10. CAMBRIA COUNTY.

Cambria county is bounded on the north by Clearfield, east by Huntingdon and Bedford, south by Somerset, and west by Westmoreland and Indiana. Population 11,256.

This is an elevated and mountainous country, lying on the high table land west of the Allegheny mountain, with an irregular and rolling surface, furrowed by deep and precipitous ravines. Much of the county is yet covered by dark forests of pine, hemlock and other timber, in which a clearing has here and there been made by the axe of the hardy settler, who has reared his humble cottage and established his home, surrounded by the solitude of the pathless wilderness.

The principal stream is the *Conemaugh*, which rises by several branches on the western slope of the Allegheny, and flows westward across the county. *Stony creek* is a large stream, which

flows northward from Somerset county, and falls into the Conemaugh at Johnstown. *Blacklick* creek rises in Cambria, by two main branches, which unite near the western border of the county and flow westward into Indiana. In the north are *Clearfield* and *Chest* creeks, which pass northward into Clearfield, and empty into the west branch of Susquehanna. All these, with many smaller streams, afford a great amount of water power, very little of which is yet improved, except by a few saw mills, and in the more settled parts of the county by flour mills.

Bituminous coal is abundant throughout most parts of Cambria county, but it is only mined for domestic consumption, except along the line of the Allegheny Portage rail road, where considerable quantities are dug for the supply of the stationary engines at the inclined planes, and for transportation eastward on the rail road and canal. Iron ore is found in several places, but has not yet been worked. Limestone, of the quality usually associated with bituminous coal, may be obtained in various parts of the county.

In the narrow valleys along the streams the soil is productive, but on the hills it is less fertile and better adapted to grazing cattle and sheep, than to the cultivation of grain. The climate is too cold for indian corn, but oats and potatoes succeed well. The winters are long and severe, and frost is sometimes seen in the summer months.

Ebensburg is the county town, situated on a commanding eminence a few miles west of the main Allegheny ridge. The public buildings are a court house, prison, academy, and three or four churches. The town is tolerably well built, and contains about 350 inhabitants. *Johnstown*, at the junction of Conemaugh and Stony creek, is a place of considerable business, being at the western termination of the Allegheny Portage rail road, and at the commencement of navigation on the Western division of the Pennsylvania canal. The town is in a deep narrow valley, surrounded by hills of considerable height which close around it and confine the view to very circumscribed limits. Population about 1,250. *Loretto*, is a village a few miles north-east of Ebensburg, in a neighbourhood chiefly settled by Catholics, who have a neat chapel erected for worship. *Munster* is a small place on the turnpike east of Ebensburg. The town of *Beula*, built some years since by a company of Welsh immigrants, is now deserted and fallen to decay.

The productions of this county are not important, and consist chiefly of lumber, coal, and such agricultural products as are suited to the soil and climate. The raising of cattle and sheep is an object of attention to the farmers, and the country being well adapted to this branch of domestic economy, it may hereafter become of considerable importance.

The value of property, real and personal, assessed for county purposes, is \$752,316 : county tax \$3,940 : State tax \$1,063.

A tolerably good turnpike, leading from Hollidaysburg to Pittsburg, crosses Cambria from east to west, passing through Ebensburg, the county town. Another from Ebensburg by way of In-

diana to Kittaning, is kept in reasonably good condition. The common roads are indifferent, as is usual in a thinly settled and rough country. The Allegheny Portage rail road crosses the county from the summit at Blair's Gap, through a wild region westward to Johnstown, where it connects with the Western division of the Pennsylvania canal, which extends down the Conemaugh towards Pittsburg.

The state of education in this county is not very flourishing. The common school system has been generally adopted, and about 50 schools are in operation; which are kept open on an average, only about three months in the year. The academy at Ebensburg has 50 or 60 pupils, but the higher branches of education are not sufficiently encouraged.

Cambria county was chiefly settled by Irish and Welsh families, and they or their descendants, with some Germans, still constitute the greater portion of the population. The Welsh language is yet spoken in many families, and is common in the streets and stores of Ebensburg. The prevailing religious denominations are Catholic, Baptist and Presbyterian.

How is Cambria bounded? Describe the face of the country. What are the principal streams, their situation and direction? Mention the important mineral productions. What is said of the soil and climate? What is the county town, and how situated? Where is Johnstown, and what is said of it? Name the other towns mentioned, and describe their situation, &c. What are the principal productions? What turnpikes, rail road and canal are in this county? What is said of the state of education and of the common schools? By what people was the county chiefly settled? What language beside English is spoken? Name the prevailing religious denominations.

11. CARBON COUNTY.

Carbon is a new county established by an act of the Legislature in 1843, including that portion of Northampton which lies north of the Blue mountain, with one township from the western part of Monroe south of the Tobyhanna, called Penn Forest. Carbon county is bounded north-west by Luzerne, east by Monroe, south by Northampton and Lehigh, and south-west by Schuylkill. The contained population is about 7,500.

The county is generally mountainous, and there is but little arable land except in the valleys of the southern part, where the soil is adapted to cultivation and tolerably productive. The *Blue* mountain is the southern boundary: north of this is a succession of smaller ridges called by various names, such as *Fire-line* hill, *Mahoning* ridge, &c. *Mauch Chunk* mountain is on the west of the Lehigh: beyond this is the *Broad* mountain extending to the eastward of the river, and still further east is the *Pocono* mountain. North of the Broad mountain are *Spring* mountain and *Bald Ridge*.

The rocks of the Blue mountain are gray and reddish sandstones (IV) having an inclination to the north-west; and overlying them, in the valley

north of the mountain, are the variegated and red shales (V) and the limestone (VI) next above in position. The coarse fossiliferous sandstone (VII) succeeds, forming a range of sharp irregular hills parallel with the mountain. All these rocks may be seen exposed near the river, above the Lehigh water gap. Next is the olive slate (VIII) and the red shale and sandstone (IX) extending on the east of the river to the Pocono and Broad mountain, and on the west to the Mauch Chunk mountain, below the town. In this mountain is the sandstone (X,) and above it the red shale (XI,) which surrounds the eastern point of the southern anthracite coal field. In the Broad mountain an axis of elevation brings up the sandstone (X,) and in the valley of Quakake, beyond it, we have the red shale (XI) beneath the pebbly conglomerate (XII) of Spring mountain, which underlies the Beaver meadow coal basin.

The southern anthracite coal field, extending eastward from Schuylkill county, terminates in a point a little to the west of the Lehigh river at Mauch Chunk. The mountains which form the edges of the coal basin on each side are about 500 feet above the adjacent valleys. On the north side of the basin the channel of Room run cuts deeply into the mountain, and exposes nine beds of coal, from 5 to 28 feet thick, making a total thickness of 111 feet. On the south side, which has not been so fully examined, are found beds of 50, 20, 15 and 9 feet. The northern beds are mined at Room run, and the coal conveyed on a descending rail road, 5 miles in length, to the landing at Mauch Chunk, where it is deposited in the boats. At the old Summit mine, nine miles west of the river, the coal bed is from 50 to 60 feet thick, and lies as a saddle on the top of a hill nearly as high as the main mountain, the coal being uncovered and quarried in open day. About thirty acres in extent have been worked from this bed, the product of which has been upwards of 1,100,000 tons. A descending rail road of nine miles extends from this mine to the river, on which the loaded cars descend by gravitation, and are hauled back to the mine by mules which ride down with the trains of coal, in large cars constructed for the purpose, feeding composedly during their rapid descent; and then refreshed and invigorated by the ride, lustily apply themselves to the work of drawing back the empty cars to the mine.

The second or middle coal field, lying north of the Broad mountain, extends into the north-western corner of Carbon county, where a number of excellent beds of coal, from 4 to upwards of 20 feet thick, have been opened and are worked in various places. From the Beaver meadow mines a rail road has been constructed to the Lehigh at the mouth of Quakake, and thence down the river to Parryville, 5½ miles below Mauch Chunk. The Hazelton mines are four miles north-west of Beaver meadow, and lie in Luzerne county, near the line of Carbon: a rail road from these communicates with that from the mines of the Beaver Meadow Company. A number of other coal companies have commenced operations in this productive region. The quantity of coal sent to market from this district in 1842 amounted to 272,126 tons.

Lumber is also an important item in the productions of this county. In the north-east are vast forests of white pine and other valuable timber, for which the construction of the Lehigh Navigation Company's improvements above Mauch Chunk have afforded an outlet to market. A very great amount of lumber is produced from the numerous saw mills recently erected near the Lehigh, and is transported in boats down the Lehigh navigation and Delaware division of the State canal, being usually preferred by the dealers to rafted lumber, and commanding a more ready sale.

This county derives most of its value from the improvements of the Lehigh Coal and Navigation Company, who with a zeal, perseverance and industry which has rarely been equalled, and over-

coming difficulties which would have proved insurmountable except by the most determined and skilful perseverance, have converted a river, useless in itself for purposes of navigation, into one of the most noble and capacious lines of canal and slackwater navigation in the Union. But for the completion of this work, the vast mineral and forest wealth of the whole region on the upper Lehigh, as well as the incalculable amount of coal in the neighbourhood of Mauch Chunk, must have remained useless and unproductive, and a country now teeming with an active and industrious population would have continued to be a savage wilderness.

Beside the river *Lehigh* there are a number of large and rapid streams, having a great amount of fall, and yielding a vast amount of water power, but little of which has yet been made productive except for saw mills. *Aquanchicola* and *Big* creeks fall into the Lehigh on the east side, above the Blue mountain; and *Lizard* and *Mahoning* creeks on the west. *Nesquehoning* flows eastward along the south side of the Broad mountain, and *Quakake* in the same direction on the north. In the pine swamps of Penn Forest, east of the Lehigh, are *Hays'* creek, *Hickory* creek or Griffith's run, *Muddy* run, and several others, propelling numerous saw mills.



Mauch Chunk.

Mauch Chunk is the principal town, and intended to be the seat of justice for the county. It is on the west bank of the Lehigh, 12 miles above the gap by which that river passes through the Blue mountain; 46 miles by the navigation from Easton, and nearly 30 from Allentown. The situation is romantic and picturesque, the town being encircled by steep mountain acclivities,

which rise in some places precipitously from the river to a height of 800 or 1,000 feet. It is a place of some resort during the summer season, from the many attractions and objects of interest which it presents to visitors. The coal mines, the inclined planes, and all the machinery and appliances necessary for mining, transporting and shipping coal may be seen here on a large and improved scale; while the pure mountain air, gushing fountains of the coldest and purest water, with beautiful views of wild, and sublime mountain scenery, give additional charms to the place. Besides the extensive operations in coal, several other branches of business are successfully pursued. There is a furnace and an iron foundry, mills, stores, work shops for various mechanical and manufacturing purposes, and a printing office from which a weekly newspaper is published.

Lehighon, Weissport, and Parryville are small towns on the Lehigh below Mauch Chunk. Lausanne and Nesquehoning are on Nesquehoning creek. Beaver meadow village is on the turnpike 12 miles north-west from Mauch Chunk. Lowrytown is on the Lehigh, above the mouth of Quakake creek.

There is a turnpike road from Mauch Chunk to Berwick on the North branch of Susquehanna, passing by Beaver meadow, Hazleton and Conyngham.

When was Carbon county established, and from what counties was it taken? How is it bounded? What are the principal mountains? What is said of the coal beds at Room run? At the Summit mine? How is the coal conveyed from these mines? At what several places is coal mined north of the Broad mountain? By what means conveyed to the river? How many tons of coal were sent from the Lehigh region in 1842? What other important production is mentioned? What improvements have been of great importance to this county? What would have been the character of the country without this work? Mention the principal streams, their situation and course. What is the chief town and how situated? What extensive business is carried on here? Name the other towns in this county and where situated. What turnpike road in the county?

12. CENTRE COUNTY.

Centre county has Clinton on the north, Union on the east, Mifflin on the south-east, Huntingdon on the south, and Clearfield on the west. Population 20,492 by the census of 1840.

The face of the country is diversified by high mountain ridges ranging from north-east to south-west, with deep valleys intervening. *Tussey's*, *Brush* and *Nittany* mountains are in the east and north-east; *Bald Eagle* mountain extends across the county near the middle; and north-west of this is the *Allegheny* mountain.

The geological features of this county are varied and interesting. East of the Bald Eagle mountain the valleys are of the great limestone formation (II), bordered on their margins next to the mountains by the overlying slate (III). This mountain and the high ridges south-east of it are of sandstone (IV). North-west of Bald Eagle mountain, along the valley in which flows Bald Eagle creek, we have the red and variegated shales (V), and the fossiliferous limestone (VI), next in order. Above this is a thin belt of the fossiliferous sandstone (VII), not always perceptible. From

this to the south-eastern base of the Allegheny, or rather of the hills which jut forward from that mountain, is a belt two or three miles wide, occupied by the olive slates and sandstones of the next formation (VIII), and above this the red shale and red and gray sandstones (IX), which form the steep front of the Allegheny. Passing over the intermediate formations, we find on the high lands beyond the summit, in the vicinity of Snowshoe and Philipsburg, beds of bituminous coal, which have been opened in some of the most accessible places, and the coal transported to the country east of the mountain.

But the most valuable mineral production of Centre county is its iron ore, which is found abundantly in the limestone valleys, and extensively mined for the supply of furnaces. It is of the kind usually found in the limestone regions of this formation, and called brown argillaceous ore; appearing under a variety of forms and of different degrees of purity. That called pipe ore occurs in parallel cylindric columns, closely cemented together, and is usually esteemed as one of the best kinds. Hollow lumps of ore are common, the interior of which is lined with crystalline hematite having a polished surface, like glazed earthen-ware. Much of it is open, porous or cellular, occurring in large amorphous masses, disseminated through the earth in which it is imbedded, without any apparent regularity or order of deposition. These ores yield by chemical analysis from 50 to 60 per cent. of metallic iron; but the product obtained from the furnace is somewhat less than this amount.

The soil of Nittany, Penn's and other valleys in this county, may be classed among the most productive lands in Pennsylvania, and form a fine agricultural district. In some parts, however, as in other limestone regions, the want of water is severely felt, and wells are often sunk to a great depth without success. The streams, after running a short distance, frequently sink into the fissures of the limestone rock and disappear. The mountain ridges separating these valleys are generally steep and rocky, unfit for agricultural purposes, and only valuable for the timber which grows upon them. Along the Allegheny mountain, and in the elevated regions beyond its summit, the country is mostly wild and uncultivated, containing but few settlements. Pine, hemlock, sugar maple, and other useful kinds of timber grow here, and lumber to some amount is produced.

Most of the streams in this county empty into *Bald Eagle* creek, which flows north-eastward to the West branch of Susquehanna. Its larger branches afford water power for furnaces, forges, rolling mills, saw mills, flour mills, oil mills and other manufacturing establishments. Three flourishing woollen factories are in operation in the county. *Moshanon* creek flows along the western side of the county, and the *West Branch* of Susquehanna forms the north-west boundary.

The climate is healthy, and considerably colder than that of the lower counties in the south-eastern part of the State; but milder than in the northern counties beyond the Allegheny. At Bellefonte, in January 1841, the mercury in the thermometer fell to 25° below 0, and in July of the same year rose to 95°. The mean

annual temperature is about 4° below that of Philadelphia, 3° below Lancaster, 1° above Somerset, and 4° above M'Kean.

Bellefonte is the county town, handsomely situated on Spring creek near the north-west side of Nittany valley, in a fertile and salubrious neighbourhood. It is a well built and flourishing place, containing the usual county buildings, with an academy and four or five churches. Population 1,032. This town derives its name from a large and beautiful spring in its vicinity. From this spring the town is supplied with water, which is raised by machinery into a reservoir on an eminence about 90 feet above the level of the spring. These water works were first erected in 1808, and have since been rebuilt and improved.

Milesboro is two miles north of Bellefonte, at the junction of Spring and Bald Eagle creeks. *Philipsburg* is on the Moshanon, at the western side of the county, 25 miles west of Bellefonte. *Aaronsburg*, *Milheim*, *Earlzburg*, *Boalsburg* and other villages are in the valleys of the eastern part of the county.

The agricultural productions are wheat and other kinds of grain, pork, beef, live stock, &c., much of which finds a market for the supply of the workmen and horses employed about the iron works in the county. Iron is the chief article of manufacture, the materials being supplied from the ore banks and mountain forests; and 16 furnaces, 10 forges and 4 rolling mills are in operation, which are estimated to produce from 15,000 to 18,000 tons of iron annually. The surplus productions of this region find their way to market by the Bald Eagle navigation, or otherwise, to the West branch of Susquehanna, or are sent across by land to the Juniata canal.

The assessed valuation of property subject to county tax in 1842 was \$5,137,802; county tax \$5,789; State tax \$6,289.

Centre county has several good turnpike roads, the principal of which is that from Lewistown to Bellefonte, and thence westward towards Erie.

There are 17 school districts in the county, which have nearly all accepted the common school system under the law; 67 schools are reported as being in operation, and are kept open from 3 to 8 months in the year. In the academy at Bellefonte upwards of 50 pupils are instructed, and at the same place is a female seminary with nearly an equal number.

This county was originally settled principally by German and Irish families, whose descendants still constitute a majority of the population.

What counties lie adjacent to Centre? Describe the face of the country and name the principal mountains. Where is coal found in this county? Iron ore, and of what kind? Describe the several varieties of this ore. What is said of the soil, timber, &c.? What are the principal streams? What are the manufacturing establishments driven by water power? What is said of the climate? Name the county town, its situation, &c. Where are Milesboro and Philipsburg? What other towns are mentioned? What are the agricultural productions? What is said of the manufacture of iron, the number of iron works, and the quantity produced? How do the surplus productions of the county reach a market? Mention the turnpike

roads. What is said of schools and academies? By whom was the county principally settled?

13. CHESTER COUNTY.

Chester county has Berks on the north, Montgomery on the east, Delaware on the south-east, the states of Delaware and Maryland on the south, and Lancaster on the west. Population 57,515. It is one of the three original counties, having been established with Philadelphia and Bucks in 1682 by William Penn.

The surface is diversified by gentle hills and fertile valleys; but can no where be called mountainous. The most considerable elevations are the North and South valley hills, which extend westward from the Schuylkill, and a ridge called the Welsh mountain, in the north-western corner of the county.

Much of the soil is of an excellent quality and highly productive; those portions which are not naturally of so fertile a character have been so improved by the use of lime as a manure, and by judicious cultivation, as to yield good crops of grain and grass. This is one of the finest agricultural districts in the State, and by the enterprise and industry of the intelligent farmers who inhabit it, has been made to present a beautiful and luxuriant picture of the neatness, order and productive prosperity of Pennsylvania husbandry.

A minute description of the interesting geological and mineralogical features of this county would far exceed the limits prescribed by the plan of this work; the following brief sketch is all that can be given. The rocks in the southern part of the county, or that portion which lies south of the Great Valley, belong chiefly to the stratified primary class, consisting of gneiss, mica slate and talc slates, with occasional veins or dikes of granitic, sienitic and trap rocks; and including numerous local beds of limestone and of serpentine. The limestone is usually white, light gray or bluish, and frequently crystalline or granular.

A variety of interesting minerals occur in this part of the county, for the discovery of many of which we are indebted to the examination and research of a number of intelligent gentlemen of the county, who have manifested an interest in the investigation of the subject. In East and West Goshen townships are found talc, asbestos, amianthus, magnesite, steatite, octohedral crystals of iron, quartz, cyanite, staurolite, amethyst, jasper, garnet, actynolite, schorl, &c. In East Bradford, besides most of the minerals last mentioned, are zircon, brown tourmalin, adularia, and lithomarge. Newlin township also contains a great variety, among which are chalcedony, agate, sapphire, corundum, beryl, green tourmalin, oxide of titanium, indurated asbestos, radiated quartz, &c. In East Marlborough are chromate of iron, oxide of titanium, iserine, &c., and near Unionville, zircon, beryl, epidote, tremolite, diallage and feldspar. In Pennsbury occur arragonite, sahite and augite, the latter containing crystals of sphene; and in a white limestone above Chad's ford, are found crystals of brucite. West Marlborough affords fine specimens of fibrous, radiated and crystallized tremolite,—also scapolite, fluete of lime, magnesite and dolomite. Red oxide of titanium is found in the vicinity of Chatham, and at other places in London Grove township. Chrome ore and silicate of magnesia, though found in small quantities associated with the beds of serpentine in different parts of the county, seem to be most abundant in the south-west, in the townships of East and West Nottingham, where they have both been mined to some extent for use in the chemical manufactories of Balti

more. Many of the above named minerals, together with a variety of others, are not confined to the townships particularly mentioned, but occur in various other places within this region.

That portion of the county called the Great Valley is included between two ridges which pass westward from near the Schuylkill, gradually approaching each other and bringing the valley nearly to a point towards the western boundary of the county. The rock of the south valley hill is principally a talc slate; while in that on the north we find a sandstone (I) overlying a belt of gneiss rocks north of the valley. The valley between the bases of these ridges is occupied by a belt of limestone which extends westward from the Schuylkill in Montgomery county, becoming gradually narrower until it terminates in a point beyond the Lancaster county line. Extensive quarries of limestone are opened at many places in the valley, for the supply of lime to the adjacent country; the demand being great, and annually increasing as its value for the purpose of a manure becomes more fully appreciated. In some parts of its range this limestone is light coloured or white, semi-crystalline or granular, affording, where the layers are sufficiently thick and solid, a superior marble for architectural purposes. Much of that used in the Girard college and other buildings in Philadelphia has been obtained from quarries a few miles east of Downingtown. At other places within the valley a handsome dark blue and variegated marble is found.

North of the Great Valley is an extensive area occupied chiefly by primary rocks of the gneiss order, in which feldspar, hornblende and quartz are the prevailing constituents. Mica and talc slates are much less common than in the region south of the valley. Small dikes and hills of trap rock are not uncommon; and a number of small beds of altered crystalline limestone occur, in which are found crystals of plumbago and other minerals. There is iron ore in Vincent township, in the neighbourhood of the Yellow springs, and at other places. A vein of titaniferous ore occurs in gneiss rock, near Isabella furnace.

In the north-eastern part of the county, the primary rocks are overlaid by the middle secondary red shale and sandstone, the southern border of which extends from the Schuylkill by Valley Forge and Kimberton to French creek, and thence up that stream north-westward towards Morgantown in Berks county. Iron ore is sometimes found in this formation, and is dug at the Warwick mine and other places in the neighbourhood of Morgantown.

Chester county is watered by numerous streams, of which the largest are the *Schuylkill* and *Brandywine*. The Schuylkill flows along the eastern side of the county, separating it from Montgomery as far as to the mouth of Valley creek. *French* creek is a considerable stream, rising on the southern border of Berks county, and flowing eastward to the Schuylkill at Phoenixville; a few miles further south is *Pickering* creek. The Brandywine rises in the north by two main branches, and runs southward nearly through the middle of the county into the state of Delaware, emptying into the Delaware river below Wilmington. In the south-west are several branches of *Elk* creek, running southward into Maryland. *Octoraro* rises near the head of the Great Valley and flows southward, forming the western boundary of the county to the State line, where it enters Maryland and falls into the Susquehanna five miles above Port Deposit.

West Chester, the county town, with a population of 2,152, is pleasantly situated in a healthy and productive neighbourhood, on the high grounds east of the Brandywine, about 27 miles west

from Philadelphia. The town contains a court-house, a new and spacious prison constructed on the principle of solitary confinement; a market-house, a bank, and eight or ten houses for public worship, belonging to various denominations. There is also a public library, and a cabinet containing an extensive collection of mineral, botanical, zoological and other specimens, illustrative of various branches of natural science. In the town and its vicinity are several academies and boarding schools, which are generally well conducted and enjoy a deserved reputation. The inhabitants are no less distinguished for their morality and industry than for their attention to literature and science; and few, if any, country towns in the State offer a more agreeable and intelligent society than is to be found in this place. The taste displayed in the erection of numerous handsome public and private buildings, and the general air of neatness and good order which prevails, are in accordance with the character of the population. Its facility of access, its pleasant and healthy location, and the interesting character of the surrounding country, combined with its other attractions, make it a favourite place of resort for numerous visitors.

The town is abundantly supplied with excellent water by means of works erected for that purpose.

Downingtown is a considerable village on the east branch of Brandywine, where crossed by the Lancaster turnpike; and also on the Philadelphia and Columbia rail road. It is situated in the Great Valley, and surrounded by fertile and productive farms, with substantial stone buildings, presenting an aspect of comfort and wealth, combined with pleasant scenery and most other circumstances which conduce to rural enjoyment.

Coatesville, eight miles west of Downingtown, on the west branch of Brandywine, is a flourishing village, also on the turnpike and near the rail road.

Phoenixville, on the Schuylkill, at the mouth of French creek, is noted for its iron and nail works, as well as other manufacturing establishments. A furnace has been erected here for smelting iron with anthracite coal.

Marshallton, *Unionville*, *Chatham* and *Cochranville*, are villages towards the western part of the county: *Kennet-square* is in the south; *New London* and *Oxford* in the south-west, and *Waynesburg* in the north-west. There are a number of other pleasant and improving villages in various parts of this populous county.

The inhabitants are chiefly employed in agricultural pursuits, and the products of the soil are numerous and important in value. Indian corn, wheat, oats, barley, rye and buckwheat, are extensively cultivated;—cattle, sheep and swine are reared and fattened in great numbers; while butter, poultry, fruits and other articles for the city market receive attention in those parts of the county from which they can be conveniently sent thither.

The productions of manufacturing enterprise and industry are also considerable. According to the census returns, there are 3 furnaces, 10 forges and rolling mills, and several nail factories; also 11 fulling mills and 19 woollen manufactories, producing

goods to the annual value of \$55,500; 18 cotton factories and 3 establishments for dyeing and printing cotton goods—value of annual production \$148,000; 26 paper mills, manufacturing annually to the amount of \$140,400; 27 flour mills, 115 grist mills, 150 saw mills and 20 oil mills. There are 37 tanneries, producing leather to a considerable amount; the manufacture of carriages and wagons, agricultural implements, furniture, hats, boots, shoes and various other articles of necessity or convenience is carried on to considerable extent.

The county is generally well supplied with timber for domestic purposes: in those parts where wood is less abundant, coal is beginning to be used for fuel, being chiefly obtained by means of the Schuylkill navigation and Columbia rail road.

The assessed valuation of real and personal property subject to county taxation in 1842 was \$15,971,158; county tax \$31,962: State tax \$25,336.

Of the public improvements within this county, the principal is the State rail road from Philadelphia to Columbia, which passes through it from east to west. From this road a branch has been constructed, about ten miles in length, leading to the town of West Chester. The Schuylkill navigation extends along the eastern side of the county where it bounds on that river. Several good turnpike roads cross the county in various directions; the principal of which is that from Philadelphia to Lancaster. A turnpike leaves this at Downingtown, and leads north-westward by Waynesburg to Ephrata, in Lancaster county, and thence extends in the same direction until it unites with the turnpike from Lebanon to Harrisburg. The south-western part of the county is traversed by a turnpike from Wilmington to Lancaster. The common roads are generally kept in good condition: bridges are numerous, and generally well constructed.

It is pleasing to observe the general attention paid to education and mental improvement by the people of this county, for which, as well as for their general intelligence and moral and industrious habits, they are excelled by the population of few portions of the State. Many excellent academies and boarding schools, for youth of both sexes, are established in various parts of the county, which are generally well sustained and in a flourishing condition. Of the 46 school districts contained in the county, 43 have adopted the system of common school education as established by law. According to the reports received from 40 of these in 1842, they had 219 schools in operation, which were open for instruction during an average period of 6 months and 11 days in the year.

There are upwards of one hundred churches and meeting houses for public worship; of which about 30 belong to the society of Friends, 25 to the Methodists, 20 to the Presbyterians, and the remainder to various other religious societies.

The early settlements in this county, then including Delaware and reaching westward to an indefinite extent, were principally made by the immediate friends and followers of William Penn, in

1682-3. As the population increased and the settlements extended westward by the influx of numerous English, Irish and German immigrants, the distance to the seat of justice, at Upland or Chester, on the Delaware, became inconvenient to the inhabitants of the remote parts of the county. The county of Lancaster was therefore erected in 1729, and Berks in 1752; thus limiting the extent of Chester on the west and north. In 1789, the south-eastern part was laid off as a separate county called Delaware, and the original county of Chester thus reduced to its present limits.

We have not space for a further reference to the interesting historical events connected with this county, than merely to mention that several important incidents of the revolutionary war occurred within its borders. The battle ground of the Brandywine, near Chad's Ford, is now occupied by cultivated fields, in which the plough yet sometimes turns up with the soil some remnant of that bloody and eventful struggle. Near the Paoli tavern, on the Lancaster turnpike and rail road, about 20 miles from the city, is a monument erected to mark the spot where a small body of Americans were surprised and inhumanly massacred by a detachment of the British troops, on the 20th of September, 1777. Valley Forge, in the eastern part of the county, near the Schuylkill, is noted as the place where Washington, with his destitute and suffering army, took up their winter quarters towards the close of the year 1777. Here, but partially sheltered from the inclemency of the weather by a few miserable huts, and almost destitute of clothing and provisions, their sufferings were such as would have been borne by none but those who were sustained by principles of the loftiest patriotism, and endued with constancy and resignation by a firm devotion to the cause of their country's freedom.

How is Chester county bounded? Describe the face of the country. What is said of the soil, and of agriculture? What is the geological character of the rocks in the southern part? Mention some of the minerals found here, and the places where they occur. What is the rock formation of the great valley? Where is marble found? What rocks occupy an extensive area north of the great valley, and what minerals do they contain? In what part of the county is the red shale and sandstone formation? Mention the situation of the principal streams and their course. What is the county town, and how situated? What is said of its public buildings and literary institutions? Of the character of its inhabitants? Mention the other principal villages, and their situation. What are the chief agricultural productions? The principal manufactures? What public improvements by rail road and navigation? What turnpike roads? What is said of the attention paid to education? Of the academies and schools? How many houses for public worship, and to what societies do they mostly belong? What counties have been erected from the original territory of Chester? What incidents of the revolutionary war are mentioned as connected with this county?

14. CLARION COUNTY.

This is a new county, erected in 1839, from parts of Armstrong and Venango. It has Venango on the north, Jefferson on the east, Armstrong on the south and the Allegheny river on the west. By

the census returns of 1840, its population is included in that of Armstrong and Venango; the number of inhabitants within the new county is about 14,687.

The country has generally a rolling or hilly surface; a considerable portion of the soil is of good quality, and agriculture is improving as the settlements increase.

The valuable mineral resources of this region are but partially developed. Iron ore, bituminous coal and limestone are abundant, and the county is already becoming distinguished for the manufacture of iron. Seven blast furnaces and one forge are in operation, producing annually about 7000 tons of iron, which is chiefly sent down the Clarion and Allegheny rivers to Pittsburg.

Clarion river is the principal stream, flowing westward nearly through the middle of the county and falling into the Allegheny. It is navigable at high water for boats, rafts and arks; and a large amount of lumber, iron and other produce is floated down it from Clarion and Jefferson counties for the Pittsburg market.

The county town is called *Clarion*, situated on the east side of Clarion river, on the turnpike from Bellefonte to Erie. The public buildings are a neat court house of brick, a stone prison, and an academy. Several thriving villages are contained within the county, the principal of which are Strattonville and Shippenville, both on the Bellefonte and Erie turnpike, Edinburg, Curlsville and Reimersburg.

This county is rapidly improving in wealth and population: its agricultural productions, as well as its lumber and iron, are becoming valuable and important.

The most common kinds of timber are white and yellow pine, hemlock, oak and sugar maple.

Of the 13 school districts in the county, 11 have accepted the law, and 89 schools are reported as being in operation under its provisions. The fact, however, of their being kept open on an average less than three months in the year, shows that the progress of education by no means keeps pace with the general improvement of the county.

The prevailing religious denominations are Methodists, Presbyterians, Lutherans, Catholics and Baptists.

When, and from what counties was Clarion erected? How is it bounded? What is said of the surface and soil? What are the mineral productions? Iron works and their annual product? What river flows through the county? What is the county town, and where situated? Name the other villages. What is said of the progress of improvement? Mention the most common kinds of timber. What is said of the schools, and of the progress of education? Religious denominations?

15. CLEARFIELD COUNTY.

Clearfield is bounded on the north by the new county of Elk, on the east by Clinton and Centre, on the south by Cambria, and on the west by Indiana and Jefferson. Population 7,834.

The face of the country in the eastern part of the county is hilly

and mountainous, and intersected in every direction by deep valleys or ravines along the principal streams. In the middle and western portion the surface is rolling and irregular, but mostly susceptible of being converted into good farming land.

The *West branch* of Susquehanna enters this county at the southwestern corner, and runs through it in a north-easterly direction for a distance of about 70 miles. It is navigable at high water for rafts of lumber and arks carrying produce, large numbers of which descend during the spring freshets. *Clearfield* creek enters the county on the south, and flows northward to the Susquehanna, two miles below the town of Clearfield. *Mushannon* creek, which forms the county line between Clearfield and Centre, runs north-eastward and falls into the Susquehanna near Karthaus, about 20 miles below Clearfield town. In the northern part are the tributary streams of the *Sinnemahoning*, a large creek which empties into the Susquehanna in Clinton county. The principal of these is *Bennett's* branch, which runs north-eastward and eastward, and joins the *Drift-wood* branch near the north-eastern corner of the county. *Anderson's* creek and *Chest* creek are considerable streams, and like those already mentioned contain sufficient water during high freshets to float rafts of lumber from the country bordering upon them. There are also many smaller streams which are sufficient to afford water power for saw mills and other purposes.

Clearfield county, being situated within the range of the bituminous coal formation, yields abundance of that article of an excellent quality. The steep hill sides along the courses of the streams show numerous outcrops of coal beds; and coal, iron ore and limestone are often found within a few feet of each other.

The soil in the valleys along the large streams is productive, and much of the upland is tolerably fertile, except in the eastern part of the county, where it is too rough and rocky to admit of easy cultivation.

The climate of this elevated region is considerably colder than in the southern and eastern parts of the State: the summers are usually cooler and the winters longer and more severe.

Clearfield is the county town, situated on the West branch of Susquehanna, and contains a court-house, a prison, an academy and three churches. The town has about 400 inhabitants, and is improving. *Curwinsville* on the Susquehanna, 6 miles above the county town, and on the Bellefonte and Erie turnpike, is a flourishing place containing about 300 inhabitants. *Luthersburg* is on the same turnpike 12 miles west of Curwinsville, in an improving neighbourhood with a good soil for agriculture. *Frenchville* is a small town near the Susquehanna, about 15 miles below Clearfield, in a settlement inhabited chiefly by French immigrants. *Karthaus* is on the river, 25 miles below Clearfield, in a region containing abundance of iron ore and coal. This is one of the first places where the experiment of smelting iron with bituminous coal was successfully tried. The furnace built here was for some time in operation, with the materials all convenient; but from some cause the work has been suspended for two or three years.

The principal production of this county is lumber, of which large quantities have been floated down the Susquehanna to a market. The county contains about 100 saw mills: the most valuable timber is white pine, oak, ash, cherry, maple, poplar and hemlock. Of later years, however, the agriculture of the county is improving, and a considerable amount of surplus grain is produced in some of the settlements. The mineral productions of coal and iron ore are important, and when a convenient outlet by the improvement of roads and navigation shall be afforded, will doubtless be brought into active usefulness and form an important item in the wealth of the county. At present about 150,000 bushels of coal are annually sent to market from the mines of Clearfield.

By the assessment of 1842, the estimated value of property made taxable for county purposes is \$1,217,732; county tax \$6,065; State tax \$1,251.

The turnpike road from Bellefonte to Erie crosses Clearfield county from east to west: the common roads, as in most rough and newly settled countries, are indifferent. The canal to connect the West branch of Susquehanna, by way of the Sinnemahoning, with the waters of the Allegheny river, passes through the northern part of the county, but is not yet completed.

The people of this county have of late shown a very commendable attention to the improvement of education. Every township has adopted the common school system, and 64 schools are in operation. The academy at Clearfield has two classical teachers and is tolerably well supported. In the same town is a well conducted female seminary, which has been in successful operation for the last three years.

The population is of a mixed description, consisting of settlers from various places. Many families are of Irish descent, and Germans are numerous. A settlement of French people has already been mentioned. The religious denominations are various; Presbyterians, Methodists, Catholics, &c.

How is Clearfield bounded? What kind of surface has it? What is the principal river? Tell the situation and course of the other principal streams. What are the mineral productions? What is said of the soil?—The climate? Name the county town, its situation, &c. Where is Curwinstown? Luthersburg? Frenchville? Karthaus? What is said of the iron works at this place? What is said of the productions of this county, forest, agricultural and mineral? Turnpike and canal? Education, schools, academies, &c.? Population and religious denominations?

16. CLINTON COUNTY.

Clinton is a new county, erected in 1839 from the western part of Lycoming and the northern part of Centre. It is bounded on the north by Potter, on the east by Lycoming, south by Centre, and west by Clearfield and Elk. Population 8,223.

This county is generally mountainous and uneven, and in the northern and western parts very thinly inhabited. The *West branch* of Susquehanna flows through it from west to east, and it

is well watered by numerous other streams, of which the largest are *Bald Eagle*, *Sinnemahoning* and *Kettle* creeks.

The geological character of the county is various. Passing north-westward from the limestone of Nittany valley (II) we observe in regular succession the several formations of slate, sandstone, shale, and limestone, which intervene between the lower limestone and the coal formation west of the main Allegheny ridge. Bituminous coal is found on Queen's run near the Susquehanna, and at several other places further westward.

In a county possessing so great a variety of rock formations, the soil must of course be various. The limestone valleys and the alluvial bottom lands are highly productive when well cultivated; the slate lands are less fertile, but yield good crops if properly farmed, while the sandstone soils are generally stony and rough. Timber is abundant, and a considerable trade in pine and other lumber is carried on. This, with other productions of the county, is taken down the Susquehanna to a market.

The seat of justice for Clinton county is at *Lock Haven*, a new place situated at the junction of the Bald Eagle navigation with the West branch of Susquehanna, where the public buildings have been erected and a flourishing town is rapidly growing up.

Mill Hall is a thriving village, up the Bald Eagle valley, south of the Susquehanna.

Dunnstown, *Lockport*, and *Farrandville* are villages on the northern bank of the river. Near the latter place a very large and costly furnace was erected in 1838, for the manufacture of iron with coke made from the coal of the neighbourhood, but after continuing in operation for a short time the work was suspended.

Assessed valuation of real and personal property subject to county taxation in 1842, \$1,497,903: county tax, \$6,606; State tax \$1,850.

The West branch division of the Pennsylvania canal is in operation from Farrandville downwards, and is partly finished for some distance above, towards Sinnemahoning. An artificial navigation has been constructed along Bald Eagle creek, by a company, in order to form an outlet for the productions of Centre and Clinton counties: this work connects with the State canal at Lock Haven, the county town of Clinton.

Most of the townships have adopted the common school system, and about thirty schools are reported as being in operation under the law, which are open on an average about five months in the year.

When and from what counties was Clinton erected? By what is it bounded? Is it mountainous or level? What are the principal streams? Where is bituminous coal found? What is said of the various kinds of soil? Of the productions? What is the county town and its situation? Mention some other towns in this county. What is said of the furnace near Farrandville? Name the improvements in navigation. What is said of the schools?

17. COLUMBIA COUNTY.

Columbia county has Lycoming on the north, Luzerne on the east, Schuylkill on the south-east, and Northumberland on the south and west. By the census of 1840 it contained 24,267 inhabitants.

The surface is uneven, being diversified by mountains, hills and valleys. Along the river are some comparatively level tracts having a rich soil, and in some of the western parts of the county the limestone land, when well cultivated, is very productive. In the northern and southern portions the country is hilly and broken, and the soil of but moderate fertility.

In the south-east are the Little and the Nescopeck or Catawissa mountains; in the north-east the Knob mountain, extending westward from Luzerne; and on the northern border is the high range prolonged eastward from the Allegheny, which is here called the North mountain.

So many rock formations are brought to the surface in this county, by numerous anticlinal and synclinal axes or lines of elevation and depression, and so often are some of these formations repeated by the consequent changes of dip, that a minute description of their various ranges, foldings and doublings would occupy several pages. A mere general notice of some of the more prominent features in the geology of the county is all that our limits will permit.

In the elevated range called Montour's ridge, which extends from the West branch above Northumberland, eastward by Danville, to a point north-east of Bloomsburg, an axis of elevation passes nearly along the middle of the ridge, and the rocks fold over it, inclining towards the north and the south. The interior mass of this ridge is composed of hard gray and reddish sandstones (IV,) which are covered along both sides, and sometimes nearly or quite to the top of the ridge, by the slates and shales of the overlying series (V,) the lower part of which consists of yellowish or greenish slates, containing thin strata of limestone, in which are impressions of shells and other fossils, and near these a very valuable layer of brownish red iron ore, from six inches to two feet in thickness, also containing fossil impressions. This ore is found on both sides of the ridge as far eastward as the neighbourhood of Bloomsburg, where the strata converge and unite over its top as it sinks away on the east, and finally disappears under the overlying red shale in the vicinity of Espytown. In the slates above the iron ore are some thin layers of dark coloured limestone, succeeded by a thick bed of red shale which forms the upper portion of the series.

Overlying this red shale is a limestone formation (VI) which encircles the ridge on the outside of the red shale, and which may be seen not far from the river above Northumberland, and along the road from Danville to Bloomsburg, extending also from this to within two or three miles of Berwick, where it sinks away beneath the overlying slate. From this point the northern division of the limestone extends along the outer border of the red shale north of the ridge, passing a little south of Moorsburg, to the West branch, near the mouth of Chilisquaque creek.

The next formation in order, the fossiliferous sandstone (VII,) appears to be wanting in this part of the State; for immediately next to the limestone last mentioned we find the olive slate (VIII,) which with the red shales and sandstones next above (IX,) spread over a wide region south of Montour's ridge, in the valleys of Shamokin and Roaring creeks, as far as the Little mountain. The same formations also occupy most of the northern part of the county, extending to the southern side of the North

mountain. In the neighbourhood of Washington, in the west of the county, the limestone (VI) appears, encircling the red shale which extends eastward from the vicinity of Milton.

The Knob mountain, which terminates at Fishing creek near Orangeville, is formed by the union of two ridges which in Luzerne county pass on either side of the south-western point of Wyoming coal basin, and extend into Columbia county in a long narrow ridge which is capped with a hard coarse sandstone (X). The same rock appears in the Nescopeck or Catawissa mountain, and in Little mountain. South of Catawissa mountain, the little valleys on Catawissa creek are of the red shale (XI) which underlies the conglomerate (XII) of M'Cauley's and Buck mountain, supporting the anthracite coal beds.

The *North branch* of Susquehanna flows through the central part of Columbia county, which is watered by several other considerable streams. *Fishing* creek rises by numerous branches along the side of the North mountain, and has a nearly south course to the river near Bloomsburg. *Catawissa* creek has its source in Schuylkill county, flows north-westward, and falls into the North branch at the town of Catawissa. *Roaring* creek rises near the southern extremity of Columbia, and forms part of the south-western boundary. There are numerous other streams of sufficient power for mills, furnaces, &c.

Danville is the county town, situated on the North branch, 12 miles above Northumberland, containing upwards of 1,500 inhabitants. Since the construction of the canal, and the discovery of iron ore in its immediate neighbourhood, this place has rapidly improved and has become the seat of extensive manufacturing and business operations. There are four blast furnaces, a large iron foundry and machine shop, a cupola furnace for castings, and various other manufacturing establishments. The town also contains the court house, prison and other county buildings, several churches and a number of neat private dwellings. The North branch canal passes through the town, and renders it a considerable depot for the shipment of country produce.

Bloomsburg is a flourishing place near the river and canal, nine miles above Danville. *Catawissa* is on the east side of the river, at the mouth of Catawissa creek, three miles south of Bloomsburg. *Berwick* is on the river and canal at the eastern line of the county, 12 miles above Bloomsburg. Jerseytown, Washington, and Fruitstown are villages towards the north-west of the county. Meersburg is five miles north-west of Danville; Williamsburg and Orangeville are near Fishing creek, north of Bloomsburg; and Mifflin on the south side of the river below Berwick.

Agriculture forms the chief occupation of the inhabitants, and a large amount of surplus productions, consisting of flour, grain, pork and various other articles, are sent by the canal to a market at Philadelphia, Baltimore and other places. Iron has also become one of the staple productions: eight blast furnaces have been erected, which are supplied with the ore from Montour's ridge, and many thousand tons of ore are annually sent from this county for the supply of other furnaces. There is a forge on Catawissa creek, for making bar iron.

The value of property subject to taxation for county purposes for 1842 was assessed at \$4,522,106: county tax \$13,461: State tax \$7,312.

About 25 miles of the North branch division of the State canal are in Columbia county, extending from a little below Danville to Berwick, where it passes into Luzerne. There are bridges across the river at Danville, Catawissa and Berwick. A turnpike road extends from Danville to Pottsville. The unfinished Little Schuylkill and Catawissa rail road is partly in this county, passing down the valley of Catawissa creek.

The subject of general education has been much neglected in many parts of the county. Schools are not sufficiently encouraged, and incompetent teachers, as is too often the case in other parts of the State, are entrusted with the care of youth and with their moral and literary improvement, which, under such guidance, seldom leads to the acquirement of solid and useful attainments. There are 19 school districts in the county, of which 15 have adopted the ~~common~~ school system as established by law, and have 107 schools in operation, in which instruction is given during an average period of about 4½ months in the year. There is an academy and a female seminary at Danville.

Methodists and Presbyterians are the most numerous religious denominations. There are some Episcopalians and Friends, as well as several other societies. Many of the early settlers were Germans from Berks, Northampton and Lancaster; some emigrants from New Jersey, and a number from Bucks and others of the older counties of Pennsylvania.

By what counties is Columbia bounded? Describe the face of the country and soil. What are the principal mountains? Where does a valuable iron ore occur? Describe the range of the limestone formation. On what mountains is anthracite coal? What river is in this county? Mention the rise and course of the principal creeks. What is the county town and how situated? Give an account of its iron works, public buildings, &c. Where is Bloomsburg? Catawissa? Berwick? What other places are mentioned, and how situated? Mention the agricultural products, and by what route sent to market. What iron works are established? What canal, bridges, turnpike, and rail road are in this county? What is said of education in general? Of common schools and academies? Religious denominations? Early settlers of the county?

18. CRAWFORD COUNTY.

Crawford county has Erie on the north, Warren on the east, Venango and Mercer on the south, and the state of Ohio on the west. The number of its inhabitants, according to the census of 1840, was 31,724.

The surface of the country is rolling and uneven, approaching to hilly, and presents many agreeable and picturesque views of varied and beautiful scenery. A soil naturally fertile and productive is found in most parts of the county; but this being a rather newly settled region, art has yet done but little towards improving and embellishing the wilder features of nature.

In considering the geological character of the rocks which extend over the greatest portion of this county, we find but little to indicate the existence of any very valuable mineral deposits. The north-western part contains rock strata of formations whose position is below the coal measures, and having a gentle descent towards the south-east, they pass in that direction below the north-western margin of the great bituminous coal field. In the southern part we find the coarse and massive sandstone which constitutes the bottom or floor of the productive coal measures; but here it lies so near the summits of the hills as to preclude the idea of any extensive bed of coal being contained above it, except in some peculiar localities towards the south-west of the county. Thin beds of impure coal may be sometimes met with in the rocks below this sandstone, but they are seldom productive or valuable. An extensive deposit of calcareous marl is said to have been found near Harmonsburg, from which lime is manufactured.

This county is chiefly watered by *French* creek and its numerous branches, the principal of which are the *Conneaut* and *Cusawago*. In the south-west are some branches of the *Shenango*, and in the east are the head waters of *Oil* creek, which flows southward to the Allegheny river. *Conneaut* lake is a beautiful sheet of water, about five miles in length and two in breadth, situated a few miles west of *Meadville*. *Oil* creek lake in the north-eastern, and *Sugar* creek lake in the southern part of the county are of less extent, but form highly ornamental features in the natural scenery of this picturesque region.

Meadville, the county town, is pleasantly situated on *French* creek, 25 miles north-west from *Franklin* on the Allegheny river, and 37 south of *Erie*. Its population is upwards of 1,300. In the centre of the town is a public square, on which stand the court house, a spacious and well built edifice; the Episcopal church, also a very creditable specimen of architecture; and the Presbyterian church. There are several other places of public worship in the town. An arsenal has been erected here for the preservation of arms belonging to the State.

Allegheny college is built upon an eminence about half a mile north of the town, and commands a fine view of the surrounding country. The main building is four stories in height, surmounted by a cupola and flanked with wings of three stories, being 120 feet in front by 44 feet deep. The order of architecture is Ionic, and the general appearance of the whole edifice produces a pleasing effect.

Harmonsburg, *Conneaut*, and other improving villages also belong to this county.

By far the greater portion of the inhabitants are engaged in agricultural pursuits, the productions being grain of different kinds, potatoes, hay, wool, &c. The soil being favourable for grazing, considerable attention is paid to the rearing of live stock, and the products of the dairy are estimated to amount annually to near \$50,000.

Timber is in great plenty, but little lumber is produced except for domestic consumption. The sugar maple grows abundantly and the annual product of maple sugar in the county is about 214,000 pounds. Pot and pearl ashes are also made to the amount of about 50 tons in a year.

The numerous streams afford a plentiful supply of water power, part of which is employed in propelling 168 grist and saw mills, a number of fulling mills, oil and paper mills and other manufacturing machinery.

According to the assessment for 1842, the value of property subject to taxation in this county was \$2,768,546: county tax \$8,305: State tax \$2,768.

The general improvement of Crawford county and the prosperity of its agricultural, manufacturing and commercial business, will be greatly increased by the completion of the Erie extension of the Pennsylvania canal, which extends through the county from south to north! Another branch of the State canal has been constructed from Meadville, down French creek, to the Allegheny river at Franklin.

There are several turnpike roads, the principal of which is that leading from Pittsburg to Erie, which crosses the whole breadth of the county, passing through Meadville; and one from Meadville to Franklin.

A respectable portion of the population may be described as intelligent, enterprising and industrious. Several societies have been established for the promotion of moral, religious, and charitable objects. Popular education is encouraged and common schools are established in every district, under the provisions of the law. The number of districts is 27, all of which reported to the superintendent in 1842, showing an aggregate of 250 schools in operation under the public system, the average time of instruction being upwards of 5 months in the year.

In Allegheny college upwards of 120 students are instructed in the higher branches of learning. A manual labour department is connected with the college, consisting of a farm of 60 acres and a work shop, by means of which a considerable number of students are enabled to support themselves by their own labour, and to defray the expenses of their education. The institution is furnished with chemical and philosophical apparatus, and has a library which is said to contain 8,000 volumes.

How is Crawford county bounded? What is the character of the surface and soil? What is said of the rock formations in general, and of the probability of their containing valuable mineral deposits? What is the principal stream and its branches? What other creeks and lakes are mentioned? Name the county town, its situation and public buildings. Describe Allegheny college. What other villages are there? In what occupation are most of the inhabitants engaged? Mention the productions of the farm and the dairy. Also those of the forest. What is said of mills, &c. Mention the canals in this county and their advantages to the inhabitants. Turnpike roads. What is the general character of the population? The condition of education, and the common schools? What is said of Allegheny college?

19. CUMBERLAND COUNTY.

Cumberland county is bounded on the north by Perry, on the east by the Susquehanna river, which separates it from Dauphin,

on the south by York and Adams; and on the west by Franklin. Population, 30,953.

The greater portion of this county lying within the great Kittatiny valley is comparatively level, though the slate region in the north, between the limestone and the Blue mountain, has a somewhat uneven and hilly surface. In the southern part are the ridges of the South mountain, which are generally rough and uncultivated, being mostly covered with timber. The Blue or Kittatiny mountain, which extends along the northern side of the county, and forms the division line between Cumberland and Perry, is of considerable height, and affords, from many points on its summit, an extended and charming prospect of the beautiful valley on the south and east. A wide and varied landscape of woodland, farms and villages is spread before the view like an immense picture, stretching away in the distance until mingling with the dim horizon; and the eye wanders in delighted admiration over the beautiful and extended scene.

The *Susquehanna*, which flows along the eastern side of Cumberland, is the only navigable stream in the county. *Conedoguinet* is a large creek, which rises in Franklin and runs in a very serpentine course through the northern part of Cumberland to the *Susquehanna*, into which it empties about two miles above Harrisburg. It affords water power to a number of mills and other manufacturing establishments; but is an unsteady stream, being subject to freshets in heavy rains, and sometimes becoming very low in long continued periods of dry weather. *Yellow Breeches* creek rises from a number of large springs in the south-western part of the county near the South mountain, and flows through the southern portion of Cumberland until it forms the line between this and York county,—emptying into the *Susquehanna* three miles below Harrisburg. It is a clear, rapid, and lively stream; not liable to be affected by dry seasons, and scarcely freezing in winter. It affords an invaluable amount of water power to the mills, forges and furnaces situated upon it and its branches. The present uncouth appellation given to this beautiful stream renders it very desirable that its original Indian name should be restored; this seems, however, now to be lost; for after the most diligent research and inquiry we have been unable to discover it.

Several very large springs rise within this county. One at Springfield, south of Newville, throws out a volume of water sufficient to turn several mill wheels within a few rods of the spring, and forms a considerable stream, which runs northward to the *Conedoguinet*, having its banks studded with mills. Letart's spring, south of Carlisle, also yields a flow of water sufficient for mills at its source, and for many others along the stream which runs from it. Many other large springs exist near the head of *Yellow Breeches* creek, in the south-western part of the county. Near Dublin gap, at the foot of the Blue mountain, is a spring strongly impregnated with sulphur; and Carlisle springs, four miles from the town, have acquired some note as a fashionable place of resort. At Mount Rock, seven miles west of Carlisle, a

large spring issues from a limestone rock, the water from which, after running a short distance, sinks again into the earth, and passing under a hill, once more reappears on the north side and pursues its course to the Conedoguinet.

The ridges of the South mountain, in the southern part of Cumberland, are almost wholly composed of hard white sandstone (I,) and have a meager rocky soil, mostly covered with timber, which yields fuel for the furnaces and forges in that region. At Pine Grove furnace, on Mountain creek, is a detached bed of limestone, of limited extent, surrounded by the mountain sandstone; and connected with it a deposit of brown argillaceous and hematite iron ore, which is productive and has been worked for many years. At the northern base of the South mountain commences the great limestone formation of the Kittatiny valley (II,) which extends northward until it meets the next formation of dark slate (III,) situate between the limestone and the Kittatiny mountain. Along the northern side of the South mountain, near the contact of the white sandstone with the limestone, iron ore is abundant, and is extensively mined for the supply of furnaces. Further north, and wholly within the limestone formation, pipe ore and other varieties of excellent quality may be obtained in many places. The rocks of the Kittatiny mountain are the coarse gray and reddish sandstones (IV) next in order above the slate, and are not particularly valuable either for their utility or their mineral contents. In the neighbourhood of Lisburn, on Yellow Breeches creek, the middle secondary red shales and sandstones pass across from York county, overlapping the limestone to a limited extent. Large beds of the calcareous conglomerate belonging to the upper portion of this formation are visible along the steep banks of the creek; but the material is generally too silicious to be worked and polished as the Potomac marble, with which it is identical in other respects. Some ridges and dikes of trap rock are also apparent in the same neighbourhood, connected with the great trappean range in the north of York county. A remarkable trap dike issues from the South mountain near Carlisle Iron works, and extends northward through the limestone and slate, forming an abrupt stony ridge quite across the county to the Blue mountain, east of Sterrett's gap. This dike is believed to pass through the Blue mountain, being probably the same which is seen near the Susquehanna in Perry county, and again east of the river in Lykens' valley above Millersburg, in Dauphin county.

The soil of the limestone portion of Cumberland is exceedingly fertile, and is generally well cultivated. Beautiful and highly improved farms offer a pleasing subject of attention to the traveller in this valley, where a healthy and industrious population, surrounded by comfort and plenty, find their wants abundantly supplied by the luxuriant productions of a region so highly favoured by nature. The slate lands, north of the limestone, are more uneven in surface, and the soil less fertile; but when well farmed and improved by the use of lime and other manures, good crops are produced, and the labours of the husbandman are amply repaid.

Carlisle is the county town, situated on the turnpike, 18 miles west of Harrisburg, and 118 from Philadelphia. The Cumberland Valley rail road, from Harrisburg to Chambersburg, also passes through it, affording daily communication east and west. Being pleasantly situated, in the midst of a healthy and fertile country, handsomely laid out, and well built, inhabited by a well bred and intelligent population, Carlisle is one of the most agreeable places

in the interior of Pennsylvania. The public buildings are a court house, a prison, a market house, a bank, and nine or ten churches, several of which are large and handsome edifices. Dickinson college is a spacious building, 150 feet in length and four stories high, which, together with its enclosed grounds, is situated in the border of the town. The borough contains 4,351 inhabitants. A short distance east of the town are commodious barracks for the United States' troops, where numbers of them are frequently quartered. In the same neighbourhood is the county almshouse.

Shippensburg is an old established town on the western border of the county, adjoining Franklin, with a population of 1,473. The turnpike and rail road from Carlisle to Chambersburg both pass through this place, and considerable local business is done here in the way of trade and manufactures.

Mechanicsburg is a flourishing town on the rail road, about 8 miles east of Carlisle, containing 700 inhabitants, situated in a fertile and well settled neighbourhood, and a place of increasing business.

Newville, is in the north-west part of the county, 12 miles from Carlisle, near the rail road, and has about 650 inhabitants.

New Cumberland, a village at the mouth of Yellow Breeches creek, contains about 300 inhabitants, and has several flour mills, saw mills, nail works, &c.

Lisburn is on Yellow Breeches creek, in the south-eastern part of Cumberland; and several other thriving villages exist in different parts of the county.

The productions are chiefly agricultural, consisting of various kinds of grain, live stock, salted provisions, &c. Manufactures, of different kinds, are also carried on to some extent. The county contains 8 furnaces and 5 forges, in which large quantities of iron are made from the ore of this region, and which yield employment and support to a considerable number of workmen. The surplus productions of the county are mostly sent to Philadelphia by rail road or by the canal from Harrisburg, and to Baltimore by the Susquehanna or by land. Timber is abundant, the mountains affording a plentiful supply for the iron works, and the farms mostly having a sufficiency for domestic uses. Oak, hickory, chestnut, walnut, ash, poplar, &c., are the prevailing kinds. Pitch pine grows on the mountains and on the slate hills, and locust is common in the limestone soil of the valley.

The assessed value of real and personal property, made taxable for county purposes in 1842, was \$11,368,510: county tax \$11,368: State tax \$15,145.

The Cumberland Valley rail road extends through this county from the Susquehanna river at Harrisburg, westward by Mechanicsburg, Carlisle, Newville and Shippensburg to Chambersburg in Franklin county. The turnpike from Harrisburg to Chambersburg and Bedford also extends in the same direction. Another turnpike leads from Carlisle southward towards Baltimore.

Cumberland county contains 18 school districts, and the common school system has been generally adopted. The condition

of education seems to be improving. Upwards of 120 schools are reported as being in operation, which are open from 4 to 11 months in the year.

Dickinson college, at Carlisle, was incorporated in 1783, and named in honour of John Dickinson, an eminent citizen, who was a liberal donor to the institution. It has been frequently aided with funds granted by the State; but having several times suffered from fire, and being depressed by other adverse causes, its usefulness has been much impaired. Some years since it was placed under the care of the Methodist conference, since which time it has been apparently more prosperous. The number of students in the college proper is 123, and in the preparatory department 56. There is also at Carlisle a female seminary containing about 50 pupils.

This county is principally inhabited by the descendants of the early Irish and German settlers. The German language is yet spoken in many families, though there are few who cannot speak English. The inhabitants are generally a moral and industrious people; Sunday schools, Temperance, Bible, and Missionary societies as well as other religious and benevolent associations are numerous.

Among the natural curiosities of the county may be mentioned a large cave on the bank of the Conedoguinet, about a mile north of Carlisle. The entrance is by a semicircular archway, seven or eight feet high, in a limestone cliff immediately on the bank of the creek. From this a vaulted passage, eighty or ninety yards in length, leads to a point where it branches off in three directions. One of these leads to a large chamber, extending to a considerable distance: the others are smaller and of somewhat difficult access. This cave is well worthy of a visit from those who have never explored more extensive subterranean wonders of the same kind.

How is Cumberland county bounded? Describe the face of the country and name the principal mountains. What river flows along the eastern side? Describe the rise, course, and character of Conedoguinet creek. Of Yellow Breeches creek. What large springs are mentioned? Mineral springs? At what place is iron ore found? What remarkable dike of trap rock is mentioned and what is its extent? What is said of the several varieties of soil? Give a description of Carlisle, its situation, public buildings, &c. Where is Shippensburg? Mechanicsburg? Newville? New Cumberland? Lisburn? What is said of the productions, iron works, &c.? By what route is the surplus produce sent to market? What are the common kinds of timber? What rail road and turnpikes in the county? What is said of the schools and the general condition of education? Give an account of Dickinson college. From whom are the inhabitants mostly descended, and what is their character for morality and industry? Describe the cave on the bank of Conedoguinet near Carlisle.

20. DAUPHIN COUNTY.

Dauphin county is bounded on the north by Northumberland; east by Schuylkill and Lebanon; south by Lancaster; and west by the Susquehanna river, which separates it from York, Cumberland and Perry. Population, 30,118.

In the southern part are some tracts of comparatively level land, but most of that portion may be more properly termed rolling or hilly: the middle and northern parts are mountainous. The Kittatiny or Blue mountain extends from north-east to south-west across the middle of the county; a little further northward, and running parallel with the Blue mountain, is the Second mountain. The Third and Fourth mountains, entering this county from the eastward, unite in a high bold ridge which terminates about two miles east of the Susquehanna, and is there called the Third mountain. The Second mountain, crossing the Susquehanna below the town of Dauphin, folds round "the cove" on the west side of the river, and returns eastward again across the Susquehanna below Duncan's island. It is here called Peters' mountain, and ranges north-eastward through Dauphin to the Schuylkill county line, near which it unites with Berry's mountain. The latter runs nearly eastward, from the Susquehanna below Millersburg, to its junction with Peters' mountain. The Mahontongo mountain extends from the Susquehanna river along the whole northern border of the county. Bear and Big Lick mountains enter the north-eastern part of Dauphin, where they unite and terminate abruptly about twelve miles east of the river. Between Berry's and Peters' mountains is a series of irregular elevations known by the name of Dividing ridge, separating Armstrong's and Powell's valleys, and further eastward the Short or Broad mountain.

The *Susquehanna* river forms the entire western boundary of Dauphin county, flowing along it for a distance of about 45 miles. The other principal streams are the *Conewago* creek, which separates this county from Lancaster on the south, *Swatara*, *Paxton*, *Fishing*, *Stony*, *Clark's*, *Powell's*, *Armstrong's*, *Wiconisco* and *Mahontongo* creeks; the last dividing Dauphin from Northumberland county on the north. All these streams, together with *Manada* and *Beaver* creeks which flow southward into the *Swatara*, have mill improvements on them, and most of them afford a large amount of water power which is yet unemployed. The largest of these streams are the *Swatara*, *Clark's* creek, *Wiconisco*, and *Mahontongo*. This county is well watered for agricultural purposes, containing, besides the creeks already named, numerous smaller streams in every part of it.

Few counties in the State present so great a variety of geological features as Dauphin; for in it we find nearly, if not quite, all the rock formations, from the white sandstone which overlies the primary rocks, upwards to the coal. By referring to the article on geology in the early part of this work, the order and relative position of those formations will be perceived.

The *Conewago* hills, in the southern part of the county, are composed of trap rock: north of these we find the middle secondary red shale and sandstone, extending as far as the neighbourhood of Highspire on the *Susquehanna*, where it overlaps the great limestone formation of the Cumberland valley (II). This limestone ranges from Lebanon county across Dauphin to the *Susquehanna*; its northern limit on the river being at the lower end of Harrisburg, and the line of junction between the limestone and slate passing thence eastward to the *Swatara* creek, north of Hummelstown, and so on to the Lebanon county line near Palmyra. Some belts of slate are

contained within the range of this limestone, one of which may be observed passing from the Swatara west of Hummelstown, south of the poor house, and extending nearly to the Susquehanna.

North of the limestone is a broad slate formation (III,) having a hilly and rolling surface, which occupies the region between the northern limit of the limestone, and the southern base of the Kittatiny or Blue mountain. Some thin strata of limestone are found in certain parts of this slate range.

The rocks of the Blue mountain consist chiefly of the hard, compact, white, gray and reddish sandstone (IV) which lies next in order above the last mentioned slate, and which forms so many of the mountain ridges in middle Pennsylvania. On the northern slope of this mountain and in the valley between it and the Second mountain, are the red and variegated shales (V) with the overlying limestone (VI), the fossiliferous sandstone (VII,) the olive slate (VIII,) and along the south side of the Second mountain the red and gray sandstones and red shale (IX) next in position. In order to account for the small space occupied by so many formations, some of which in other parts of the State occupy of themselves a wide extent of country, it must be recollected that the strata here are nearly vertical, or in truth thrown rather beyond a vertical position, so that their order of superposition is inverted, and the strata which really lie uppermost in place appear to dip steeply beneath those which are actually below them. Rock strata which are vertical can only occupy an area equal to their thickness, while those which approach the horizontal position, usually spread over a wide region.

The Second mountain is mainly composed of a coarse hard grayish sandstone (X) which is also found in Peters' Berry's and Mahontongo mountains; all these being in fact but the same ridge which winds round and recrosses the county several times. The rock next in order is the bright red shale (XI) which underlies the coarse pebbly conglomerate next below the coal bearing strata. This red shale is found encompassing all the anthracite coal fields, and from its softness and liability to decomposition has been worn down so as usually to form valleys around the high sharp ridges which bound the coal basins. We accordingly find it extending down the valley of Stony creek, between the Second and Third mountains, and folding round on the Susquehanna above the town of Dauphin, again following up the valley of Clark's creek, thus enclosing the coal field of the Third and Fourth mountains. Passing round the junction of Peters' and Berry's mountains on the east, it enters Williams' valley and stretches down Wiconisco creek again to the Susquehanna at Millersburg. The whole of Lykens' valley, which lies between Berry's and Mahontongo mountains, is of this red shale, the northern division of which extends up the valley of Pine creek into Schuylkill county, enclosing between it and the Williams' valley division, the Bear valley coal basin.

The Third and Fourth mountains are composed of the coarse conglomerates and sandstones (XII) which immediately underlie the coal, and it is in the high narrow depression between these ridges that the coal of the "Stony creek coal region" is found. Owing, however, to the displacement consequent upon the highly upheaved position of the rocks below it, and to the crushing effect near the junction of the uniting ridges, the coal beds towards the western extremity of this basin are confused and uncertain. Further eastward the prospect is better, and excellent coal has been obtained, some of which is so soft and free burning as to approach the bituminous character.

The Big Lick and Bear mountains, in the north-eastern part of the county, are also of the cemented pebble or conglomerate rock, and in like manner enclose a coal basin, the western end of which extends into Dauphin county. This is commonly known by the name of the Bear valley coal region, the western point of which is at the junction of the two last named mountains, about twelve miles east of the Susquehanna. Most of the coal obtained from this valley has been mined at Bear gap, an opening in the Big Lick

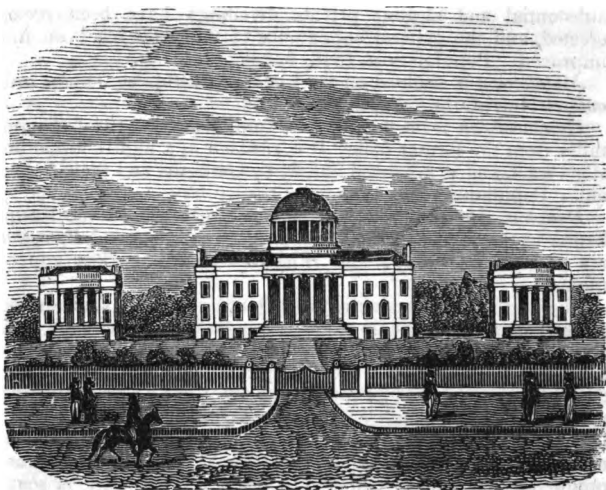
mountain through which Bear creek flows southward towards Wiconisco creek. The mountains which bound the coal basin on the north and south are here about 750 feet in height above the level of Bear creek, and contain numerous coal strata which descend towards the centre of the narrow valley at an angle of about 45°. The gap made by the passage of Bear creek through the mountain has exposed the coal on both sides of the stream, and affords great facilities for mining it advantageously. One of the beds opened is eleven feet thick, two of seven feet, and others of less size. Several coal seams are known to exist here which have not yet been fully explored; one has been ascertained to be 24 feet thick. Shafts have been sunk on the slope of the mountain north of the valley, and beds of 24, 12, 10, 8 and 7 feet of coal have been found there. The mining operations at Bear gap are carried on by a company; and a rail road, 16 miles in length, has been constructed from the mines to Millersburg on the Susquehanna. Here the coal cars are ferried across the river to the Pennsylvania canal on the west side, and the coal discharged into canal boats, being chiefly transported to Baltimore by way of the Pennsylvania and Tide-water canals. The completion of the Wiconisco canal, on the east side of the river, from Millersburg to the head of the Eastern division of the Pennsylvania canal at Clark's ferry or Duncan's island, will greatly facilitate the coal trade from this region, offering a more convenient means of transportation, and one by which the troublesome necessity of ferrying the loaded cars across the Susquehanna may be avoided.

The limestone region, in the southern and south-eastern part of the county, has a rich and loamy soil which is highly productive. The slate formation, between this and the Blue mountain, is more hilly and less fertile; but by proper improvement and the free use of lime as a manure, may be made a fine agricultural region. The flats along the Susquehanna are generally sandy. Several of the valleys in the middle part of the county are very narrow, and but little cultivated. Armstrong's and Powell's valleys, situated between Berry's and Peters' mountains, belonging to the red shale and sandstone formation (IX) have a tolerable soil, and for eight or ten miles from the Susquehanna are generally settled and cultivated, though the surface is in many parts rough and hilly. The townships of Upper Paxton, Mifflin, Lykens and Wiconisco, lying in Lykens valley between Berry's and Mahontongo mountains, have mostly a red shale soil (XI,) and are thickly settled and well cultivated, producing good crops of wheat and other grain.

The climate is generally healthy, and the mean annual temperature at Harrisburg is nearly the same as at Philadelphia. Winter sets in somewhat earlier, and spring opens rather later than in the neighbourhood of the city.

The principal town is *Harrisburg*, which is the seat of justice for the county, and capital of the State. The other towns and villages are *Middletown*, *Hummelstown*, *Halifax*, *Dauphin*, *Millersburg*, *Highspire*, *Linglestown*, *Gratztown*, *Berrysburg*, and *Wiconisco*.

Harrisburg is beautifully situated on the eastern bank of the Susquehanna, on a gently elevated plain between the river and Paxton creek. The public buildings belonging to the State occupy a commanding position on an eminence in the northern part of the town. The State House or Capitol is a large and handsome brick building, surmounted by a dome, and having a circular por-



State Capitol at Harrisburg.

tico in front supported by six Ionic columns. The interior is conveniently arranged: the first floor having a Senate chamber on the north, and a spacious hall for the House of Representatives on the south; between which is a large circular rotunda and staircase. On the second floor are apartments for the state library, canal commissioners, supreme court, and the committee rooms of the Senate and House of Representatives. At each end of the capitol are separate buildings for the State offices, constructed in a similar style of architecture. That on the north contains the Executive chamber, the offices of the secretary of the commonwealth and state treasurer; while that on the south is occupied by the surveyor general and the secretary of the land office. These public buildings stand in a large enclosure, planted with trees, and surrounded by a brick wall on which is a neat paling. The state arsenal is on the public grounds south of the capitol.

The county prison, lately erected, is a noble structure of the Gothic style, built of cut stone, and altogether affords an admirable specimen of prison architecture. Its interior arrangement is excellent and is planned with a view to the principle of separate confinement.

The other public buildings are a court house, a spacious market house, and nine churches, of which the Presbyterian, the Lutheran, and the German Reformed are large and commodious edifices.

Harrisburg is abundantly supplied with pure water from the Susquehanna river. This is raised by steam power into a reservoir on an eminence north of the Capitol, from which the water is distributed throughout the town by means of iron pipes.

This town is rapidly increasing in extent and population. Many

substantial and elegant private dwellings have been recently erected, and the general appearance of the place has been much improved. Population in 1840, 5,980.

Middletown is situated on the Lancaster turnpike, 9 miles south-east of Harrisburg. Population 756.

Hummelstown is on the turnpike from Harrisburg to Lebanon, 9 miles from the former place. It is situated in a highly fertile limestone tract, and is inhabited chiefly by Germans and their descendants: Population, 480.

Dauphin, *Halifax*, and *Millersburg* are towns on the Susquehanna in the upper part of the county. *Gratztown* and *Berrysburg* are in Lykens' valley: and *Wiconisco* is at the Bear gap coal mines.

The agricultural productions of Dauphin are the same as those of the eastern and middle counties generally. Wheat and Indian corn are the principal, with rye, oats, buckwheat, potatoes, grass, &c. The forests afford a large supply of timber for fencing, fuel, the making of charcoal for iron works, &c.; but no great amount is manufactured into lumber. There are three furnaces and one forge for the manufacture of iron in this county, besides a steam rolling mill, and two air furnaces in Harrisburg. The principal mineral production is coal, of which a considerable quantity is sent to market annually, and on completion of some improvements now in progress will be materially increased.

During the season of navigation, most of the surplus produce of this county is sent to Baltimore by way of the Pennsylvania and Tide-water canals and Chesapeake bay; but when the navigation is suspended, much of it finds its way to Philadelphia by the Harrisburg, Lancaster, and Philadelphia rail roads. The produce of Lykens' valley generally finds a ready market at Pottsville.

The value of real estate, horses, cattle, &c., assessed for county purposes in 1842, was \$10,039,407; county tax \$30,948; State tax \$13,146.

The Pennsylvania canal extends along the Susquehanna, from the southern extremity of the county to Duncan's island, where it crosses the river; one division continuing up the Juniata and the other up the western bank of the Susquehanna. The Wiconisco canal, not yet completed, extends from Clark's ferry to Millersburg, at the mouth of Wiconisco creek, a distance of 12 miles. The Lykens' valley rail road, a single track of flat rails, is constructed for the transportation of coal from the mines at Bear gap to the Susquehanna at Millersburg, 16 miles. The Harrisburg and Lancaster rail road extends from Harrisburg to Dillerville, near Lancaster, where it connects with the Philadelphia and Columbia rail road.

Turnpike roads lead from Harrisburg in various directions, towards York, Lancaster, Columbia, Lebanon, Clark's ferry and Carlisle; these, together with the common roads, except in the more unsettled parts of the county, are kept in good order. Three noble bridges extend from this county across the Susquehanna. Two of these are at Harrisburg; one of them, erected by the

Cumberland valley rail road company, is an elegant structure, having the rail road laid on the roof, and carriage ways beneath. The third is at Duncan's island or Clark's ferry, built by the State, having a tow path attached to the south side for the purpose of drawing canal boats across the river at that place. There are also several fine bridges across the Swatara, and other streams within the county.

The state of education among the people at large is not flourishing; but since the introduction of the common school system, the condition of the youth in this respect is rapidly improving. There are 17 school districts in the county, of which 11 have accepted the law establishing common schools. Ten of these districts reported to the superintendent in 1842, having 74 schools, which are kept open an average of 6½ months in the year.

The Harrisburg academy is a well conducted institution, in which are taught Latin and Greek, the natural sciences, geography, English grammar, &c. The average number of pupils is 25, of whom 20 are pursuing classical studies. There are also some excellent private schools. Probably more than three fourths of the people of this county can speak the German language; half of them speak it generally; but there are few who cannot speak English also, and these are found principally in the upper part of the county.

Dauphin was originally a part of Lancaster, and was first settled by Irish and Scotch emigrants. The Germans followed, and their descendants now occupy most of the county. The first clergyman settled in this part of the country was John Elder, a Scotchman, who preached for 56 years in the Paxton church, about two miles from where Harrisburg now stands. He wielded the sword of the flesh as well as that of the spirit, and held for several years a colonel's commission in the provincial service; commanding the stockades and block-houses that extended from the Susquehanna to the Delaware at Easton. It is said that he often carried his rifle into the pulpit, and his congregation were prepared in the same way against attacks from the Indians. About the year 1756, the church was surrounded by the savages so closely that, as was afterwards learned from an escaped prisoner, the rifles in the church were counted by the Indians; but as there appeared to be too many of them, the savages went off without molesting the congregation. In the year following, the congregation were attacked after they had dispersed, and two or three were killed and others wounded. The farmers were in the habit of carrying their rifles into the fields with them for their protection while at work.

A number of those who were called friendly Indians were in the habit of coming down among the settlements of the whites about the beginning of summer. They remained in small parties about the country until towards winter, making baskets and pursuing other Indian avocations. When they went off there were generally some murders committed, supposed to be by them on their route; but the perpetrators could never be identified. It was a succession of outrages of this kind that led to the expedition of the "Paxton

boys," which resulted in the murder of a considerable number of the Indians who were placed for protection in the jail at Lancaster.

John Harris, the father of the founder of Harrisburg, fixed his habitation at an early day on the bank of the river, near the present lower end of the town. He traded extensively with the Indians, sending his skins and furs to Philadelphia on pack horses, and bringing back such articles of merchandise as were desirable to the savages. He also engaged in agriculture, and is said to have been the first person who introduced the plough on the banks of the Susquehanna. This enterprising pioneer of civilization was, however, frequently in danger. On one occasion a company of Indians came to his house, on their return from a trading excursion, many of them being intoxicated. They asked him for rum, but were refused, as he feared mischief if they should obtain more. Enraged at his refusal, they seized and tied him to a mulberry tree on the bank of the river to burn him alive. During their proceed-



John Harris rescued by the friendly Indians.

ings a band of friendly Indians in the neighbourhood, to whom the alarm had by some means been given, came to his rescue, and he was released after a severe struggle between the parties. In remembrance of this event, he afterwards directed that on his death he should be buried under the tree where this adventure occurred. He died about the year 1748, and according to his request was buried under this memorable tree, where his remains still repose, together with those of some of his family. Part of this tree is yet standing, and is enclosed in a grave yard 15 feet square, the title to which is secured by conveyance from the commissioners who laid out the town.

A son of this John Harris, also named John, became the proprietor of a large tract of land, on part of which Harrisburg now stands. During his time "Harris' ferry" became a noted place, and it is said that twenty years before the town was laid out, he predicted that it would become the centre of business in this part of the country, and would some day be the seat of government of Pennsylvania. Accordingly, when the town was laid out in 1785, he conveyed to the commissioners four acres of ground on the hill where the Capitol now stands, "in trust for public use, and such public purposes as the legislature shall hereafter direct."

The act for establishing the seat of government at Harrisburg was passed February 21, 1810; and the offices and public documents were removed from Lancaster in October, 1812.

By what counties is Dauphin bounded? What portions are level, hilly, and mountainous? Describe the situations and extent of the several mountains mentioned. What river is on the west? Name the other principal streams. What geological formations occupy the southern part of this county? Describe the range of the limestone. Of the slate. What are the rocks of the Blue mountain? What between this and the Second mountain? In the Second and other mountains? In what valleys is the red shale (XI) found? On what mountains is the pebbly conglomerate rock? Describe the situation of the Stony creek and Bear valley coal basins? What is said of the coal beds at Bear gap? How is this coal conveyed from the mines to the canal? What is the character of the soil on the limestone and slate? Of that on the other formations? What is said of the climate? Name the principal towns. How is Harrisburg situated? Describe the state capitol;—the county prison. What are the other public buildings? How is the town supplied with water? What is said of its improvement in extent and population? Where is Middletown? Hummelstown? Dauphin? Halifax? Millersburg? What towns in Lykens' valley? Where is Wiconisco? What are the productions of agriculture?—of the forest? What iron works in the county? What is the principal mineral production? By what way are the surplus productions sent to a market? What canals are in the county?—rail roads?—turnpikes?—bridges? What is said of the condition of education?—of the common schools?—of the Harrisburg academy? What proportion of the inhabitants speak German? Of what county was this originally a part, and by whom settled? Who was the first clergyman, and what is said of him? Relate some of the troubles which occurred with the Indians. Where did John Harris settle, and in what business was he engaged? What was done to him by a party of Indians? How was he released from them? Where was he afterwards buried, according to his own direction? What is said of his son John, the founder of Harrisburg? What land did he give for public use? When did Harrisburg become the seat of government?

21. DELAWARE COUNTY.

Delaware is bounded on the north-east and east by the counties of Montgomery and Philadelphia; on the south and south-west by the river Delaware and state of Delaware; and on the west and north-west by the county of Chester, to which it originally belonged, having been erected into a separate county under the name of Delaware in 1789.

It is the smallest county in the State except Philadelphia; con-

taining but about 177 square miles, or 114,281 acres of land. Population 19,791.

The face of the country is generally hilly or undulating, except near the river, where there are large tracts of level meadow, very valuable for grazing or pasturage.

The geological formation of this county belongs to the primary class, with some variations of metamorphic and igneous character. Gneiss and mica slate are the prevailing rocks; modified in some places by the influence of trap and other injected matter. In Upper Providence and Radnor townships there are beds of serpentine. Vast quantities of stone for building and other uses are quarried in this county: the rock principally used for this purpose is a gray granitic gneiss, which being found near the tide-waters of the several creeks, is easily transported to Philadelphia and other places. A whetstone, peculiarly adapted to sharpening scythes and shoe-makers' and saddlers' knives, is found on Darby and Crum creeks, from which a supply of this article for nearly the whole United States is furnished.

The soil of Delaware county, being derived chiefly from the disintegration of primary rocks, is not naturally of the most fertile character; but by careful attention to its improvement by judicious culture, and the use of lime, gypsum and other manures, it has been rendered so productive as to be surpassed by few counties in the State.

Besides the river *Delaware* which forms part of the southern, and the *Brandywine*, part of the western boundary of this county, there are several other considerable streams which are navigable to the head of tide-water. *Chester*, *Ridley*, *Crum* and *Darby* creeks, all rising in Chester county and flowing southward to the river Delaware, pass across the whole breadth of Delaware county. In addition to these are *Cobb's*, *Green's*, *Marcus Hook*, *Naylor's run*, *Gulf*, and several other small creeks. These streams furnish water power for a great number of mills and manufacturing establishments which are in operation. The county abounds in excellent springs, which water every farm and almost every enclosure.

Chester, originally called Upland, is the county town, situated on the Delaware 15 miles below Philadelphia. It contains about 900 inhabitants, and has a court house, a jail, a market house, a bank, several churches, a library and a lyceum. Chester is an incorporated borough; it is also a port of entry, though seldom used as such. Vessels bound to Philadelphia frequently lie here in the winter, waiting the opening of the navigation upwards, and two long wharves or piers for their protection from floating ice have been erected, which form a harbour, and are kept in repair by the United States' government. The first provincial assembly of Pennsylvania was held here in 1682, shortly after the landing of William Penn's colony.

Marcus Hook is on the Delaware, three miles below Chester, near the south-east corner of the county and State. It contains about 400 inhabitants. The market house, not used perhaps for nearly half a century, and a number of dilapidated buildings would seem to furnish evidence of decline in this little town; but a spirit of improvement recently manifested will, it is hoped, at least re-

cover what has been lost or neglected. Many years ago, large vessels wintered here in a safe harbour, protected by projecting wharves; but the dock is now partly filled up and affords but little protection to shipping.

Above Chester is the Lazaretto, where vessels coming from sickly ports, or those suspected to be infected by contagious diseases, perform quarantine under the regulations of the health office of Philadelphia.

Darby is a village situated on the creek of the same name, at the head of tide-water, and midway between Philadelphia and Chester. The three towns of Chester, Marcus Hook and Darby are among the oldest in Pennsylvania; but from some cause they have improved perhaps less than any others in the State. Their increase of population falls much behind that of the country adjacent.

Besides the towns already mentioned there are several thriving villages of recent growth, amongst which are Leiperville, Howellville, Lima and Village-Green. There are also a number of manufacturing villages which have sprung up around the larger cotton and woollen factories, of which Rockdale on Chester creek is the largest.

The principal agricultural productions of this county are wheat, corn, oats, and potatoes; but the soil being peculiarly fertile in grass, most of the farmers, to a greater or lesser extent, devote their attention to grazing and the productions of the dairy. Both the butter and beef of Delaware county are highly esteemed in the Philadelphia market; and great numbers of the fat cattle are driven to New York for the supply of that city. In the summer season fresh butter is sent weekly from this county by the rail road to the Baltimore and Washington markets.

Delaware ranks among the foremost counties in the state for manufactures, particularly those of cotton and woollen goods. It has 25 cotton and 12 woollen factories, which employ upwards of 3000 persons, and produce articles to the value of about \$2,000,000 annually. There are also in this small county 31 flour mills, 48 saw-mills, a number of paper mills, rolling mills, furnaces for castings, tanneries, potteries, carriage manufactories, machine shops and various other establishments for manufacturing purposes.

The value of real and personal estate assessed for county purposes, in 1842, was \$6,578,628; amount of county tax \$14,623; State tax \$9,927.

A rail road leading from Philadelphia by Wilmington to Baltimore passes through this county. The Philadelphia and Columbia rail road crosses the north-eastern part, as does also the turnpike from Philadelphia to Lancaster. The only canal in the county is one of something more than a mile in length, which has been constructed by the proprietor of Leiper's extensive stone quarries, in order to convey the stone to vessels in the tide-water.

The condition of the common roads is improving, and bridges are constructed over the creeks on most of the leading roads in the county.

The native citizens of Delaware county, in point of education

and intelligence, are not inferior to the population of any other county in the State.

The condition of the common schools in some of the districts is excellent, and in most of them it is improving. Nearly all the districts in the county have accepted the law: in some of them the schools are kept open during the whole year; but generally not more than 7 or 8 months, unless continued by private subscription, which is frequently the case. There are about 68 school houses in the county, which are mostly substantial edifices of stone or brick.

"Haverford Central school," in which the usual collegiate course of instruction is given, was established by the society of Friends about the year 1831. The advantages of the school are confined to the sons of members of that society. A large and convenient building has been erected for its accommodation: it has four teachers or professors, and about 50 students.

Sharon boarding school for girls is near Darby, and is a well conducted institution.

The "Delaware county Institute of Science," located in Upper Providence township, was established a few years since as an auxiliary in the cause of education and the diffusion of useful knowledge. It has a museum which contains a large number of specimens in the animal, vegetable and mineral departments of natural science, besides many other curiosities. Lectures are delivered in the Hall of the Institute during the winter season and are generally well attended.

The Radnor Lyceum has also a collection of specimens, and sustains a course of lectures during the winter.

This county contains six public libraries: one at Darby containing 2000 volumes; one at Upper Providence, 1150; one at Chester, 600; one at Radnor, 300; one at Concordville, 250; and one at Springfield, 200.

There are 48 places of public worship, of which there are belonging to Friends 16, Methodists 12, Baptists 6, Episcopal 5, Presbyterian 4, New Jerusalem 1, Christian 1, Congregationalist 1, Roman Catholic 1, Free 1.

The English language is now universally spoken in the county. The first settlers were Swedes, who established themselves along the Delaware about the year 1638. They continued in possession until the landing of William Penn, and afterwards those who remained became blended with the general influx of settlers from England. The site of the large mansion erected by the Swedish governor Printz, on the island of Tinicum, can still be shown. The celebrated historical painter, Benjamin West, was a native of this county; and the house in which he was born is yet standing in the township of Springfield.

How is Delaware bounded and to what county did it originally belong? What is said of the face of the country? Describe its geological character? What valuable material is obtained from the rocks of this county? What is said of the soil? What two rivers water the county? Mention the principal creeks. Give a description of the county town;—of Marcus

Hook. Where is the Lazaretto? Derby? Mention the principal villages. What are the productions of agriculture and of the grazing farms? What is said of the manufactures of Delaware? Name some of the principal branches carried on. What rail roads, turnpike, and canal are in this county? What is said of the education and intelligence of the inhabitants? The number of common schools and their condition? Give some account of Haverford Central school, and Sharon boarding school. Of the Delaware county institute of science. Radnor lyceum. How many places of public worship are there, and what are the principal religious societies? Mention the public libraries. Who were the first settlers of the county? With what others did they become blended? What ancient building was on Tinicum island? What celebrated painter was born in this county?

22. ELK COUNTY.

The new county of Elk was erected by an act of the legislature at the session of 1843, and is composed of the former north-western part of Clearfield, the north-east of Jefferson, with a portion from the south of M'Kean.

It contains no towns, and but a few scattered settlements, being a remote unfrequented region, covered with thick forests abounding with wild animals. The few inhabitants which it contains are mostly lumbermen and hunters.

When was Elk county erected, and from what counties was it taken? What is said of the nature of the country?

23. ÉRIE COUNTY.

Erie county is in the north-western corner of Pennsylvania, having lake Erie on the north-west, the state of Ohio on the west, Crawford county on the south, and Warren county and the state of New York on the east and north-east. Its population, according to the census of 1840, is 31,344.

The country presents a rolling surface, with a ridge of high land extending nearly parallel with the lake shore at some miles' distance from it. This ridge separates the waters which flow northward into lake Erie from those which reach the Ohio by way of French creek and the Allegheny river. The soil of the northern portion of the county, bordering on the lake, is said to be best adapted to the cultivation of grain, and produces fine wheat and corn. In the south it is more favourable to grass, and grazing and dairy farms are found most profitable.

The rock formations chiefly consist of the argillaceous sandstones, shales and slates underlying the coal bearing strata, and are not remarkable for the value of their mineral contents. Some deposits of iron ore are found, from one of which, within 7 miles of the town of Erie, a blast furnace is supplied.

French creek and its numerous branches water the southern part of the county; in the west and north are *Conneaut*, *Elk*, and *Walnut* creeks, with a number of smaller streams, which flow into lake Erie.

The climate is healthy and pleasant; the breezes from the lake

moderating the sultry heats of summer, and the winter is less severe than in the more elevated portions of the State. At the town of Erie the thermometer rarely indicates a higher degree of heat than 92°, and seldom falls below 0.

Erie, the county town, is situated on a bay which extends from the lake between the peninsula of Presque Isle and the main land. It was laid out in 1785, and is now an incorporated borough containing 3,412 inhabitants. The public buildings are a court house, prison, market house, academy, two banks, and eight houses for public worship, belonging to Episcopalians, Presbyterians, Methodists, Baptists, German Reformed, and Catholics.

This place possesses many advantages in a commercial point of view. The harbour is one of the best on lake Erie, containing about six square miles of good anchorage, with an average depth of 20 feet, and is capable of affording complete protection to a large fleet, both from the weather and from an enemy. Fortifications for its defence have been commenced by the government of the United States. This is also one of the points of connexion between the commerce of the Atlantic and the western states and lakes, by means of the canals and rail roads already made and in course of construction in Pennsylvania. On the completion of the Erie extension of the Pennsylvania canal, it will be connected with Pittsburg, that vast laboratory of manufacturing industry and commercial enterprise, and will have opened to it the rapidly increasing trade of the Ohio and Mississippi, as well as a communication by canal and rail road with Philadelphia and Baltimore.

Waterford is situated near lake Le Bœuf, on the turnpike from Erie to Meadville and Pittsburg. It is an incorporated borough, with a population of about 400. There are a number of other flourishing towns and villages, the principal of which are Wattsburg, North East, Edinboro, Springfield, Girard, Juliet and Wesleyville.

The principal agricultural productions are wheat, Indian corn, oats, buckwheat, potatoes, wool, butter and cheese. There are about 40 grist mills and 120 saw mills in the county. Lumber to a considerable amount is produced from the forests, and 125 tons of pot and pearl ash, and 254,241 pounds of maple sugar are annually made. Three woollen factories and 15 fulling mills are in operation, and various other branches of manufacture are successfully pursued. One blast furnace and two foundries are in use for the production of cast iron.

The value of property subject to taxation in 1842, was assessed at \$3,270,435; county tax \$11,721: State tax \$4,294.

Of the public improvements within the county, the principal is that portion of the State canal usually termed the Erie extension, which passing northward from the Beaver division, crosses the counties of Mercer and Crawford, and extends from the southern line of Erie county to the lake shore at the town of Erie. Acts of incorporation have been granted for constructing rail roads from Erie to Wattsburg, and from Erie to North East. A turnpike road extends from Erie, through Waterford to the southern line of the

county, and thence continues to Meadville in Crawford county, where it connects with the Mercer, Butler and Pittsburg turnpike, and also with that leading through Franklin and Brookville to Bellefonte, in Centre county.

In most parts of Erie county a commendable degree of attention is paid to the subject of popular education. The common school system is adopted in all the districts, which are 24 in number, and contain an aggregate of 233 schools. These are kept open for instruction during an average period of nearly seven months in the year. The academy at Erie is reported to contain about 70 pupils, and is tolerably well sustained: there is also in this town a seminary for the education of young ladies, and a select school called the Erie institute. There is also a flourishing academy at Waterford.

The inhabitants are mostly of New England origin, though there are many settlers from other parts of Pennsylvania. The general character of the population for intelligence, morality and industry will not suffer by a comparison with that of most other counties in the State.

Only the southern part of this county was included within the original boundaries of Pennsylvania, the north-western corner of the State then just touching the shore of the lake. In 1789 the harbour of Erie, then known as Presque Isle, with the triangular territory now included in this county beyond the original northern line of the State, was purchased from the United States for the sum of \$151,640. This purchase was made with a view of securing to Pennsylvania the advantages of a harbour, as well as an extent of about 30 miles of lake shore and the benefit of an outlet for the trade, commerce and productions of the State in this direction. The result has proved auspicious, and reflects credit upon the wisdom and prudent sagacity of the statesmen of those early days.

In what part of the State is Erie county, and how bounded? What is said of the face of the country?—of the soil? What is said of the rock formations and minerals? Name the principal streams? Tell the character of the climate. Describe the county town, its public buildings, &c. What are the advantages of its situation? In what part of the county is Waterford? What other places are mentioned? Mention the products of agriculture. Of the forest. Of manufactures. What public improvements are in this county? Turnpikes? What is the condition of education? Give an account of the common schools. Of the academies, &c. What is said of the inhabitants and of their general character? When, and for how much was a part of this county purchased from the United States? For what purpose was this done?

24. FAYETTE COUNTY.

Fayette has the county of Westmoreland on the north, Somerset on the east, the states of Maryland and Virginia on the south, and the counties of Greene and Washington on the west. Population by the census of 1840, 33,574.

Two mountain ridges cross this county, of which the most east-

ern, properly called Laurel hill, forms the county line as far southward as to the Youghiogeny river. About 12 miles west of this is the other, which, south of the Youghiogeny, is also called Laurel hill, but is properly a continuation of the same range which further northward is known by the name of Chestnut ridge. The country between these mountains, and west of the latter, presents a rolling and uneven surface.

The largest river is the *Monongahela*, which forms the western boundary of the county from the Virginia line to its north-western extremity. The *Youghiogeny* flows northward out of Maryland, separating Fayette from Somerset for 10 or 12 miles, and then passing through Fayette in a north-western direction, until it enters Westmoreland. *Redstone* and *Dunlap's* creeks are considerable streams emptying into the Monongahela. Besides these, there are many smaller streams in different parts of the county, which supply power to numerous mills and other manufacturing establishments.

This county lies within the bituminous coal region, and coal is almost every where abundant except near the summits of Laurel Hill and Chestnut ridge, where the rocks next below the coal formation are brought to the surface by an anticlinal axis. Along the sides of these ridges, and near their bases, iron ore is abundant in many situations, and is mined for the supply of furnaces in the neighborhood.

A large proportion of the soil, particularly in that part of the county which lies west of Chestnut ridge, is of good quality and well adapted to agricultural purposes.

Uniontown, the county seat, is pleasantly situated in a healthy and fertile neighbourhood, about 4 miles west of Chestnut ridge, or as it is here called, Laurel hill. It is an incorporated borough, and contains 1710 inhabitants. The public buildings are a commodious court house with adjoining buildings for county offices, a prison, and six churches belonging to Methodists, Presbyterians, Episcopalians and Baptists, all neat edifices of brick. Madison college is a brick building, beautifully situated, having an enclosure of several acres of ground ornamented with trees. There are two steam mills in the borough, and other manufacturing and mechanical operations are successfully carried on. This town appears to be in a flourishing condition, having within the last ten years greatly increased in extent and population.

Brownsville, on the Monongahela, 12 miles north-west from Uniontown, is a flourishing manufacturing town, and a place of considerable business. It contains manufactories of cotton, glass, paper, &c., together with a rolling mill and an establishment for making steam engines. The public buildings are a town hall, and five or six churches. Population 1362. On the opposite side of Dunlap's creek, and connected with Brownsville by a beautiful iron bridge, is the village of Bridgeport, containing 788 inhabitants. *Connellsville*, on the east side of the Youghiogeny, 10 miles north-eastward from Uniontown, is a thriving place, containing four or five churches and a number of manufacturing establishments, among which are several iron foundries, plough factories,

&c. On the opposite side of the river, and connected with the last named town by a fine wooden bridge, is New Haven, where there is a large woollen factory built of brick, four stories high, a steam mill and a paper mill.

Perryopolis is in the northern part of the county, 14 miles north of Uniontown, in a fertile tract of land called Washington bottom, said to have been taken up by General Washington in 1755, when this region was supposed to belong to Virginia. There is a glass factory at this place. *Cookstown*, on the Monongahela six miles below Brownsville, also contains glass works and a large steam saw-mill. *Germantown*, *Smithfield* and *New Geneva* are villages in the south-western part of the county. The last named place is on the Monongahela, and contains a manufactory of glass.

Agriculture is in a flourishing state in this county: the chief productions are wheat and the other kinds of grain usually cultivated in Pennsylvania, flour, live stock, wool, &c. Maple sugar is made to some extent in the southern part of the county. The surplus produce is either sent to Pittsburg, or by the National road to Cumberland, whence it is transported by rail road to Baltimore.

In addition to the manufactures already mentioned, there are in the eastern part of the county six or seven furnaces in which iron is smelted from the ore of Laurel hill and Chestnut ridge.

The National turnpike road from Cumberland to Wheeling crosses the whole breadth of Fayette county, a distance of more than 30 miles, passing through Uniontown and Brownsville. This road is admirably constructed and kept in excellent order, affording to the inhabitants an easy means of transportation and travel, both eastward and westward. The improvements commenced by the Monongahela Navigation Company will also be a great benefit to the people of this region, as a means of facilitating their trade with Pittsburg, and the towns on the Ohio and Mississippi.

The common school system is in general operation throughout the county. In 18 of the 21 school districts which it contains, 123 schools are reported as being taught under the provisions of the law, and are kept open during an average time of 5 months in the year. Madison college at Uniontown is reported as having 80 students in the collegiate and 51 in the preparatory department.

Of the various religious denominations, the Methodists and Presbyterians are most numerous: there are also many Baptists and Episcopalians, and some Catholics and Friends.

In this, as in most of the other counties, the assessed value of real and personal estate subject to county taxes falls far short of the real value and amount of property within the county. The assessment in Fayette for 1842 was \$3,805,931: county tax \$14,529: State tax \$6,400.

In the early history of this county we meet with many an interesting tale of the dangers and difficulties encountered by the first settlers in their contests with the Indians. It was here, too, that young Washington, with his small but intrepid band of Virginians, so bravely defended themselves against a greatly superior force of French and Indians, and the remains of old Fort Necessity are

still left to mark a spot celebrated in the history of that expedition. The army led by General Braddock from Fort Cumberland, against the French and Indians, in 1755, also crossed this county, and the road which they cut in their passage through the wilderness is yet in many places distinctly visible. The spot where Braddock is said to have been buried, on the retreat of the army after their defeat on the Monongahela, is still shown in the neighbourhood of Fort Necessity, near the National road, about 10 miles east of Uniontown.

Among the natural curiosities of Fayette may be mentioned Delany's cave, situated on Chestnut ridge or West Laurel hill, about eight miles south of Uniontown. It is said to have been explored to a distance of 3600 feet from the entrance, with a descent of 1600 feet,—containing many narrow and winding passages which descend to various spacious rooms and avenues, some of which are described as being 1200 feet in length and from 30 to 80 feet from the floor to the roof. In almost every part of this spacious cavern springs and streams of water are found, and according to the account of some who have visited these subterranean wonders, there is, in the largest room, a stream running through its whole length, of sufficient size to turn a grist mill.

Ohiopile falls are on the Youghiogeny, below the gap by which that river passes through the mountain ridge called East Laurel hill, in a wild and secluded spot, where the hand of man has yet done little to destroy the primitive beauty of our wild native scenery. Here, embosomed in the dark forest and enclosed between precipitous hills, the foaming river dashes madly over a perpendicular ledge of rock which rises like a wall across the stream, forming a cataract of singular beauty and wildness, whose deep and sullen roar is almost the only sound that is heard to disturb the gloomy silence of the solitary woods, or to wake an echo from the surrounding hills.

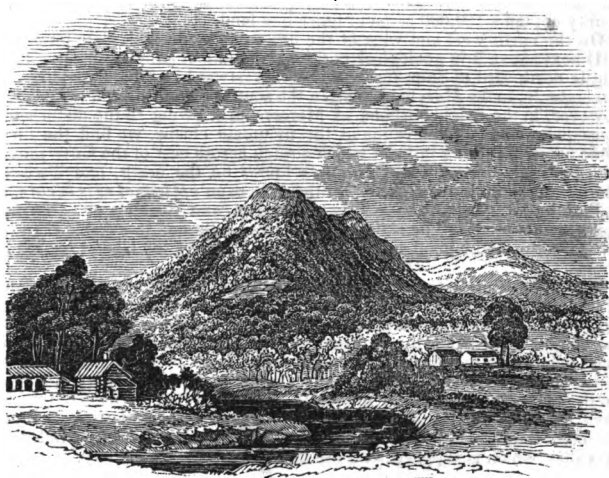
About six miles east of Uniontown, on the National road, are the "Fayette springs," a place of some resort during the summer season. The water is believed to possess medical virtues; the accommodations for visitors are ample and comfortable, which, with the pure air and romantic features of the neighbourhood, make the place a desirable and pleasant retreat from the cares of business and the sultry atmosphere of the noisy town.

By what counties and states is Fayette bounded? What two mountain ridges cross it? Describe the rivers and creeks. What are the mineral productions? Quality of the soil? What is the county town and how situated? Mention the public buildings, college, and manufactures. Where is Brownsville, and what manufactures are carried on there? What village is connected with it? Give an account of Connellsville. Perryopolis. Cookstown. What other places are mentioned? What is said of agriculture, and how is the surplus produce sent to a market? What iron works are established? What is said of the National turnpike, and the Monongahela navigation? Common schools? Madison college? Religious societies? What interesting historical events have occurred in this county? Where are the remains of Fort Necessity? Describe Delany's cave. Ohiopile falls. Fayette springs.

25. FRANKLIN COUNTY.

Franklin county is bounded on the west by Bedford; north-west by Huntingdon; north-east by Perry and Cumberland; east by Adams; and south by the state of Maryland. Its greatest extent from north to south is 38 miles, and from east to west 34 miles, containing an area of 734 square miles or 469,760 acres. Population in 1840, 37,793.

The greater part of this county consists of an extensive valley of fertile land, well cultivated and highly improved. On the east is the range of hills called the South mountain, the elevation of which, above the middle of the valley, is from 600 to 900 feet. On the west and north-west is a more elevated and rugged range, of which the most conspicuous is the North or Blue mountain, which, having stretched in an almost unbroken line from the Delaware south-westward, abruptly terminates in this county in a high peak called Parnell's knob, about two miles east of Loudon. A little further westward is Jordan's knob, another bold, picturesque elevation, formed by a turning or folding of the same range, from which the ridge then runs north-eastward along the east side of Path valley. West of Path valley is Tuscarora mountain



Jordan's Knob, Franklin County.

which stretches south-westward from the Juniata, and forms the north-western boundary of Franklin county. South of the Chambersburg and Bedford turnpike, this ridge is called the Cove mountain, and under this name passes southward into Maryland. Some of the highest elevations in the north-west of the county have been estimated at 1,500 feet above the valley. In the south-west are two knobs, called Clay-lick and Two-top mountains

which are the northern terminations of ridges crossing the State line from Maryland.

The irregular chain of hills called the South mountain consists, in this county, almost entirely of the hard white sandstone which lies next above the primary rocks (I). In the valley westward of this is the great limestone formation (II,) which has been described in our article on the general geology of the State, as extending throughout the whole length of this valley, from Easton on the Delaware to the Maryland line. In Franklin county, as elsewhere, interposed beds of differently coloured slates are found in the limestone, and sometimes also sandstones are met with in a like position. Along the eastern side of the limestone range, and near its junction with the mountain sandstone, are valuable and extensive beds of iron ore, which supply the furnaces in operation in that region. Ore is also found at many places in the valley, most of which, particularly that variety called *pipe ore*, is of a superior quality.

The soil of the South mountain is sandy and sterile, and not favourable to the culture of grass or grain. It is a wild and desert region, covered with forests which yield fuel for the iron works on its borders, and offers but little attraction to any except the wood-cutter and the hunter. But on reaching the great limestone valley, on the west of these hills, a most striking contrast is presented. A soil of almost unsurpassed fertility, highly cultivated farms, neat and even elegant buildings, an industrious, intelligent, and happy population, gladden the eye of the traveller as he passes through this beautiful and favoured region. It is estimated that Franklin county contains 180,000 acres of limestone land.

On the north-west and west of the limestone is the dark slate formation (III) next above it in geological position; the line of junction passing from a little northward of Shippensburg, south-westward by Chambersburg and Greencastle, to the Maryland line. In the south-western part of the county, however, in the neighbourhood of Mercersburg, owing to the disturbance consequent upon the elevation of the mountain chains, we find the limestone again appearing in belts which stretch across east of the Cove mountain, between Parnell's and Jordan's knobs on the north, and Two-top and Clay-lick mountains on the south. Where an *anticlinal axis* occurs, as in Path valley, the limestone is in the middle, and the slate on either side next the mountain. The slate region is more hilly and less fertile than the limestone, but with good culture it also well repays the farmer for his labour.

The mountain ranges in the north and west of the county, are composed of the gray and reddish sandstones which belong to the formation (IV) next in order above the dark slate last mentioned, and which is found in most of the valleys at their base. In Horse valley, however, there is a *synclinal axis*, where the mountain sandstone dipping from both sides towards the centre of the valley, is overlaid by the red shale (V) next above in position. So in the "Little Cove" in the south-western corner of the county, we have the same red shale, together with the overlying limestone (VI) and the olive slate (VIII.) A furnace has been erected in this secluded little valley which is supplied with ore from its immediate vicinity.

Franklin county, though it contains no large streams, is well watered for agricultural and manufacturing purposes. Its copious and unfailing mountain springs supply streams which descend and meander through the valley, affording abundant water power for the furnaces, forges, mills, and manufactories already in operation, as well as a surplus for many others which may be hereafter erected.

The *Conedoguinet* creek rises by several branches in the north-

east, and passes thence into Cumberland, which it crosses, and empties into the Susquehanna a short distance above Harrisburg.

The main branch of the *Conococheague* flows from the South mountain, in the eastern part of the county, and pursues a north-westerly course to the neighbourhood of Chambersburg, where it turns to the south-west, and after receiving several smaller tributaries passes southward across the Maryland line and falls into the Potomac at Williamsport. The west branch of Conococheague rises near the head of Path valley, down which it flows southward by Fannetsburg and Loudon, and turning south-eastward, meets the east branch about two miles north of the State line.

In the south-east, several of the head branches of *Antietam* creek issue from between the ridges of the South mountain; strong, clear and rapid streams, which yield a great amount of water power for useful purposes. The two main branches unite near the State line, and pass southward through Maryland to the Potomac.

Chambersburg, the county town, situated at the junction of Falling Spring and Conococheague creek, is one of the most pleasant and flourishing inland towns in Pennsylvania. It is in the midst of a healthy, fertile and highly cultivated country, and the abundance of water power in its immediate vicinity renders it a favourable location for manufacturing establishments. It has flour mills, fulling mills, an oil mill, a very large paper mill, and an extensive establishment for the manufactory of edge tools. The dwelling houses are mostly of brick or stone, many of them well, and even elegantly constructed; and a general air of neatness and comfort pervades the town.

The public buildings are a brick court house, a prison, a bank, an academy, and eight churches. The Presbyterian church is much admired on account of its beautiful situation in a retired quiet spot, enveloped with trees and surrounded by a delightful green; at the west end of which is the burying ground of the congregation, and adjoining it, an ancient burying ground of the Indians. Here quietly repose, near each other, the remains of the white and the red man, who, when living, often met in deadly strife; and hands that raised the rifle or the knife in mortal combat have long since mouldered into kindred dust on the same little spot of ground.

Chambersburg has the advantage of good turnpike roads to Philadelphia, Baltimore and Pittsburg, and of rail roads to Philadelphia and Hagerstown. The population is now about 4,500, one-fourth of which is beyond the borough limits.

Mercersburg is a flourishing town in the south-west, near the Cove mountain. It is mostly built of brick and stone, and has a population of 1,143. There are four churches in the town. The Theological Seminary of the German Reformed church is located here, the main building of which is a handsome brick edifice, four stories high, on an elevated situation, commanding a very fine view of the town, the mountains and the adjacent country, in which there is much of grandeur and beauty. Near the building are two neat brick dwellings for the accommodation of the princi-

pal and professors. Connected with it, and under the care of the same society, is Marshall college, which was incorporated in 1836, and named in memory of John Marshall, the distinguished American jurist. A brick building has been erected near the town, for the preparatory school of the college, and preparation has been made for the erection of the college edifice. The situation is distinguished for health, as well as for the beauty and fertility of the surrounding country, and has the advantage of an intelligent, pious and moral community.

Greencastle is near the middle of the valley, about five miles north of the State line, and contains a population of 930. The rail road from Chambersburg to Hagerstown passes through it, and it is surrounded by a country of great fertility, well watered and highly improved.

Waynesboro is a neat town in the south-east of the county, having a number of good brick houses and a population of about 800. It is in the midst of a country not surpassed in Pennsylvania for well cultivated and productive farms.

This county also contains the villages of Loudon, Fannet, Concord, Strasburg, Roxbury, St. Thomas, Fayetteville and some others.

In a region so highly favoured by nature as Franklin county, the productions of agriculture of course rank first in importance. They are those common to this part of the State, wheat, corn, rye, oats, pork, cattle, &c. Most of the wheat is manufactured into flour within the county, of which there is a large export to the Philadelphia and Baltimore markets. From the southern part, flour and wheat are taken to Georgetown and Baltimore. The county contains 80 flour mills, 100 saw mills and 13 fulling mills.

The most common forest trees are oak and hickory; but walnut, locust, chestnut, pine, maple, ash, poplar and other useful trees also abound. On the western border the cucumber tree (*magnolia acuminata*) is occasionally seen; and in the eastern, among the swamps of the South mountain, the sweet-scented magnolia (*M. glauca*) is sometimes found. A variety of calycanthus or sweet-scented shrub, probably *C. lœvigatus*, seems to be indigenous on the mountain side near the village of Strasburg. The forests yield an abundant supply of timber for building, fuel and domestic purposes, beside the large amount annually made into charcoal for the supply of the iron works.

The iron manufactures of Franklin county are important. It has six furnaces, eight forges, one rolling mill, and a number of foundries. The ore for the supply of the furnaces is obtained in various parts of the county, but is most abundant along the western base of the South mountain, near which most of the furnaces are erected.

The assessment of real and personal property made taxable for county purposes in 1842, was \$11,564,751; county tax, \$30,289; State tax, \$14,018.

The Cumberland Valley rail road extends from Harrisburg to Chambersburg, at which place it connects with the Franklin rail

road, extending from Chambersburg to Hagerstown in Maryland, and which will probably, at no very distant period, be connected with the Baltimore and Ohio rail road.

The main turnpike road from Philadelphia to Pittsburg passes through this county by Shippensburg, Chambersburg, St. Thomas and Loudon, and then crosses the Cove mountain into Bedford. At Chambersburg it is intersected by the turnpike from Baltimore by way of Gettysburg in Adams county. The southern part of Franklin is crossed by another turnpike which branches from the Pittsburg turnpike at M'Connellstown, in Bedford county, and passes south-eastward by Mercersburg, Greencastle and Waynesboro, to Emmetsburg in Maryland, and thence to Baltimore.

The common roads, except in some of the rough and mountainous parts of the county, are kept in tolerably good condition.

The state of education among the people of this county may be said to be improving. It contains 15 school districts, all of which have accepted the common school system, and 148 schools are kept open on an average nearly six months in the year. At Mercersburg is the Theological seminary of the German Reformed church, and Marshall college, both under the care of the same society. There are about 100 students now receiving instruction in the college and preparatory school. Three professors are connected with the college, and the advantages of education are liberally and extensively afforded. A female seminary has been established at Chambersburg.

Franklin county contains about 40 places of public worship, belonging to various religious denominations, and regularly supplied with ministers. Bible societies, Tract societies, and Sunday school associations have been organized; the cause of temperance has been laudably promoted, and its good effects are visible among all classes of the population. The people are generally moral, sober and industrious.

This county was first settled in 1730, by Colonel Benjamin Chambers, who established himself where Chambersburg is now situated. Settlements in this part of the country were encouraged by the proprietary government before the purchase of the land from the Indians in 1736. This, it is believed, was done to maintain the claims of the Penn family to the country, and to resist encroachments and settlements under grants from the proprietors of Maryland.

The first settlers were chiefly Irish and Germans, and the county is now mostly occupied by their descendants. The German language is still spoken in many families, but is gradually giving way to the English. The first white inhabitants experienced the difficulties and privations common to all new settlements. After Braddock's defeat in 1755, they were for eight or ten years exposed to the incursions of Indian war parties, who came down from the west and surprised the settlers, some of whom were massacred, and a few carried into captivity. After committing these outrages, the Indians would make a hasty retreat to their towns west of the mountains. These incursions from so artful and secret

an enemy induced the settlers to erect, in different parts of the county, (then a portion of Cumberland,) stockade forts into which the inhabitants fled for protection on the alarm of Indian invasion, until the men could assemble and organize for the pursuit of their savage foes. This was done at quick notice and at their own expense, without a government command or the assistance of the king's officers and troops. The hardy settler of those days, familiar with the woods and the use of his gun, accustomed to toil and exposure, was fully equal to any conflict with an Indian enemy.

How is Franklin county bounded and what is its extent? Describe the principal mountains. In what part of the county is the great limestone formation? Where is iron ore found? What is said of the soil of the South mountain? Of the limestone valley? Where is the slate formation and what kind of soil has it? What are the rock formations in the north and west of the county? What are the principal streams and their direction? How is Chambersburg situated, and what manufactures are carried on there? What is said of the public buildings, and the general appearance of the town? What are its advantages of communication? Where is Mercersburg? Give an account of its literary institutions. Greencastle? Waynesboro? What other places are mentioned? What are the products of the soil, and where sent for sale? What is said of the trees and forests?—of the iron works and how supplied with ore? What rail roads in the county? Turnpike roads? What is the state of education, schools, colleges, &c.? Places of worship, societies, and character of the people for temperance and morals? When was the first settlement made at Chambersburg, and by whom? Of what nations were most of the settlers? Give an account of some of their difficulties with the Indians. What measures were taken for their defence?

26. GREENE COUNTY.

Greene is the extreme south-western county of Pennsylvania, having the state of Virginia on the south and west, Washington county on the north, and Fayette on the east. Its population in 1840 was 19,147.

The face of the country is hilly and uneven, though nowhere mountainous, and the soil, though rocky, rough and broken in some places, is generally productive. The valleys and river bottoms are fertile, yielding luxuriant crops when well cultivated.

The *Monongahela* river flows along the eastern side of the county, separating it from Fayette; the other principal streams are *Dunkard's*, *Whitely* and *Ten-mile* creeks, all flowing eastward into the *Monongahela*. In the west are some branches of *Wheeling* creek, which runs north-westward to the *Ohio* river.

Waynesburg is the seat of justice, situated nearly in the centre of the county, in a fertile valley on the bank of *Ten-mile* creek, eleven miles from the *Monongahela* river. The public buildings consist of a neat court-house and county offices built of brick, a stone prison, an academy, and four houses of public worship, of which two belong to Methodists, one Presbyterian, and one Roman Catholic.

The other towns and villages worthy of note are *Clarksville*, at

the forks of Ten-mile creek, two miles from the river and eleven north-east from Waynesburg; *Jefferson*, on the same creek, three miles from the river; *Carmichaelstown*, in a rich and beautiful valley on Muddy creek, 12 miles eastward from the county seat; *Greensburg*, on the Monongahela, 20 miles south-east from Waynesburg; *Newtown*, on Whitely creek, in the southern part of the county; and *Mount Morris*, on Dunkard's creek, near the Virginia line. Beside these there are a number of smaller villages.

This county, lying within the great bituminous coal formation of the State, has the same geological features as are common to that region. The hill sides and high banks of the streams present to view alternating and nearly horizontal strata of sandstone, shale and limestone, with beds of bituminous coal from one to six feet or more in thickness, yielding a boundless and inexhaustible supply of that valuable material.

Wheat is the principal agricultural production, most of which is ground into flour before sending it to market; other kinds of grain are cultivated for feeding stock, of which a large amount, particularly of hogs and cattle, is raised and driven to the eastward for sale. More than 100,000 pounds of maple sugar are annually made in the county. Some woollen factories and glass works are the principal manufacturing establishments, besides a great number of grist and saw mills, and several oil mills.

Timber is so abundant here as to be of little value, and large unbroken forests of oak, poplar, walnut, hickory, ash, locust and sugar maple extend over a considerable portion of the county.

The assessed valuation of taxable property, for 1842, was \$2,222,304; county tax \$9,566; State tax, \$2,564.

No turnpike roads have yet been constructed, but several State roads lead in different directions from the county seat. The common roads are kept in tolerable condition, and bridges are built over the principal streams where crossed by the main roads.

Education is too much neglected in this county, though some hope of improvement in this respect may be reasonably entertained. There are 16 school districts in all, of which 11 have accepted the common school law, but only 7 of them made reports to the superintendent in 1842. According to these reports there were 68 schools in operation; but the average time of their being kept open was only about three months in the year.

Of the religious societies the Methodists, Baptists, Presbyterians and Roman Catholics are most numerous.

The early settlers were mostly from eastern Pennsylvania and Virginia, with some from Maryland and New Jersey, and a few Irish and German emigrants.

In what part of the State is Greene county and how bounded? Describe the face of the country and character of the soil. Name the principal streams. How is the county town situated and what are the public buildings? What other towns are mentioned, and how are they situated? What is said of the rock strata and mineral productions? Mention the different kinds of farm produce. Of manufactures. What is said of the timber?—of roads and bridges? State the condition of education and of common schools. What are the prevailing religious denominations? Whence came the early settlers of the county?

27. HUNTINGDON COUNTY.

Huntingdon is bounded north by Centre, east by Mifflin and Juniata, south-east by Franklin, south-west by Bedford, and west by Cambria. Population 35,484.

This is one of the most mountainous regions in the State, being composed of long and nearly parallel ranges of high and rugged mountain ridges, separated by deep and mostly narrow valleys. Furthest east is the Tuscarora mountain, dividing Huntingdon from Franklin; then the Shade and Black-log, extending southward from Juniata; and next Jack's mountain, a branch of which called Stone mountain folds round on the west of Kishicoquillas valley. In the south are Sideling Hill and Terrace mountain, enclosing Trough creek valley, from which rises the huge, irregular, unshapely form of Broad Top, like a great giant watching over the two counties, standing with one foot in Huntingdon and the other in Bedford, his monstrous head blackened by the smut of countless coal beds—and there he has stood for ever, with all this treasure in his own keeping. West of the town of Huntingdon is Warrior ridge, and next Tussey's mountain, beyond which is an irregular range, folding and turning sharply in several directions, being known in different parts by the names of Lock, Canoe and Brush mountains. Passing westward from this, we come to the towering front of Allegheny, supported along its base by a range of low irregular hills, which stand out like buttresses from the main mountain, as if to prop and sustain the mighty mass. Besides these principal mountains, there are many lesser hills and ridges which have their local names.

The geological features of Huntingdon county are of the most varied and interesting character. It contains all the older secondary rock formations, from the lower limestone up to the carboniferous series, in regular succession; but so intricately involved by multiplied lines of elevation and depression, and such numerous foldings and windings, that a minute and detailed description would far exceed the limits to which we are restricted. We shall therefore merely indicate the local position of the principal formations, with such notice of their ores and other valuable contents as may serve in some measure to illustrate the mineral resources of the county.

The blue limestone (II,) lowest in the series, occurs in Kishicoquillas valley, Morrison's cove, and Sinking valley, having associated with it the cellular and stalactitic brown iron ore usually found in limestone districts. It commonly occurs in irregular nests and layers in the ferruginous earth overlying the limestone, and appears to be subject to no regular or fixed law of deposition. It is extensively mined for the supply of furnaces in its neighbourhood.

Around the borders of the valleys where this limestone occurs, and near the base of the mountain ridges inclosing them, is a belt of dark slate (III,) which is next in order above the limestone.

The hard gray and reddish sandstones (IV) of the next formation are seen in Tuscarora, Shade, Black-log, Jack's, Tussey's, Lock, Canoe and Brush mountains: iron ore is found connected with this sandstone at some places on Black-log and Jack's mountain.

Next we have a series of olive, yellowish and red shales (V,) containing some thin bands of sandstone and limestone, with abundance of shells and other fossil remains in some of the strata. In this formation is included the valuable fossiliferous iron ore, from which many of our furnaces are

now supplied. The position of the ore bands is usually indicated by a dirty white and yellowish sandstone, breaking into rhomboidal fragments, containing fossil impressions, and is below the thin limestone strata beneath the red shale. The rocks of this formation are seen along the west side of Tuscarora mountain, and on the east of Shade, folding round on the south, passing west of Black-log mountain and spreading out in the valley between this and Blue ridge. It next appears on the east side of Jack's mountain, passing round its southern end and ranging along the west side of the same ridge to the Juniata, whence it passes northward on the west of Stone mountain, and then turns in a broad belt south-westward along the south-east side of Tussey's mountain, between that and Warrior ridge. We next meet it on the west of Canoe mountain, passing around Scotch valley, and spreading out southward to Hollidaysburg; whence it ranges again to the north along the west side of the Bald Eagle or Muncy mountain, east of Bald Eagle creek. The fossiliferous iron ore generally accompanies this formation, though the strata are frequently too thin to be productive. It is mined for the supply of Matilda furnace, east of Jack's mountain, near the Juniata; also east of Tussey's mountain near the little Juniata, and in several other places.

Accompanying the last mentioned formation, and overlying the red shale, is a belt of limestone (VI,) frequently containing fossil impressions, in contact with which is the next succeeding member of the series, a coarse fossiliferous sandstone (VII,) generally forming a range of sharp irregular hills, and sometimes rising into a ridge of considerable magnitude. These adjunct formations may be seen on both sides of the Tuscarora valley; between Black-log mountain and Aughwick creek in the neighbourhood of Shirleysburg; in Chestnut ridge east of Jack's mountain, and then folding round its southern end and passing on the west of it in a northern direction across the Juniata, extending in Rocky ridge on the west of Stone mountain to the head of Stone valley. From this south-westward, we find the fossiliferous sandstone in Warrior ridge, with the limestone along its north-west side. These formations again occur on the west of Lock and Canoe mountains, sweeping around Scotch valley and appearing on the Juniata near Frankstown. Hence they curve round south of Hollidaysburg, passing in a north-east direction on the west of Brush and Bald Eagle or Muncy mountain. Iron ore is occasionally found in the lower portion of the fossiliferous sandstone, near its contact with the limestone. It is mined near the Juniata, south-east of Newton Hamilton; in Chestnut ridge near Chester furnace; west of Brush mountain in the neighbourhood of Allegheny furnace, and other places.

Overlying the sandstone last mentioned is a series of dark coloured and olive slates (VIII,) with bands of gray and greenish sandstone, containing, among its lower beds, calcareous strata which in some places yield a good hydraulic cement. This formation may be seen on both sides of the Tuscarora valley in the eastern part of the county, and in the valley of Aughwick creek, where it occupies a considerable breadth;—thence, folding southward round Jack's mountain, it passes down Hare's valley to the Juniata, and crosses northward to the head of Stone valley. From this it ranges along the south-east side of Warrior ridge by the town of Huntingdon, and across the Juniata to the Bedford county line. The same formation occupies the middle part of the basin east of Frankstown and south of Scotch valley. We next find it ranging in a broad belt from a little west of Hollidaysburg nearly to the base of the Allegheny mountain, extending north-eastward into Centre county, and southward into Bedford. A valuable iron ore is sometimes found in the lower layers of this formation; being mined for the supply of Chester furnace, and at several other places in the neighbourhood of the great Aughwick valley.

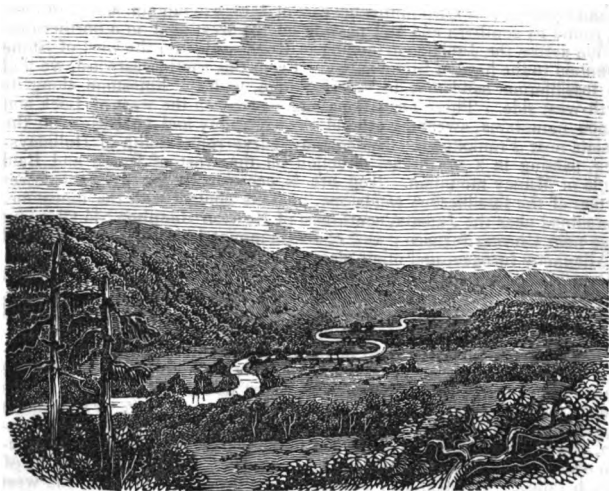
The red shales and sandstones of the next overlying formation (IX,) occupy the middle of that part of Tuscarora valley which is in Huntingdon county, and are seen along the eastern base of Sideling hill, crossing to

the north of the Juniata below the town of Huntingdon, and thence passing up the Raystown branch, west of Terrace mountain. The same rocks also appear along the base of the Allegheny mountain and for some distance up the ascent. A hard coarse sandstone (X,) succeeds, which is seen on Sideling hill, in Terrace mountain, and towards the summit of Allegheny.

Overlying the last is a series of red and greenish soft argillaceous shales (XI,) with some layers of sandstone, and containing, in its lower portion, a bed of gray and reddish silicious limestone, seldom of sufficient purity to be burned into lime. The rocks of this formation occur in Trough creek valley, and encircle Broad Top mountain. They are also seen well exposed in the Allegheny mountain, on the ascent of Plane No. 7 of the Portage rail road. Iron ore is sometimes found near the contact of this formation with the underlying sandstone: it is mined near Hopewell and Trough creek furnaces.

The conglomerate and sandstone (XII) immediately below the coal, as well as some of the lower coal beds themselves, are found on Broad Top mountain; but the limits of Huntingdon county do not extend far enough westward to include any considerable portion of the coal measures on the Allegheny.

Huntingdon county is watered by numerous streams, the principal of which is the *Juniata*, pursuing a winding course among the mountains and passing across nearly the whole extent of the county from west to east. The *Raystown* branch flows north-east-



Valley of the Juniata.

ward from Bedford county, and falls into the main stream below the town of Huntingdon. The *Little Juniata* rises at the foot of the Allegheny mountain and runs south-eastward, meeting the river below Alexandria. *Aughwick* creek rises in Bedford county, and pursues a northern direction to the Juniata near Newton Hamil-

ton. Smaller streams are numerous, of sufficient water power for extensive manufacturing operations. On Spruce creek alone, the length of which is but about ten miles, are two furnaces, seven forges, six grist mills, seven saw mills and two woollen factories.

Huntingdon, the seat of justice, is a flourishing town situated on the Juniata, containing a population of 1145. The court-house is a large and commodious brick building recently erected; there is also a prison with other county buildings, and churches belonging to Presbyterians, Methodists, Catholics and Episcopalians. The Juniata division of the Pennsylvania canal, and also the northern turnpike road from Harrisburg to Pittsburg, pass through the town. It is a place of considerable business in country produce and merchandise.

Hollidaysburg, at the head of canal navigation on the Juniata, and at the eastern termination of the Portage rail road, is the largest town in the county: the borough containing about 2000 inhabitants, and including Gaysport, separated only by a branch of the Juniata, the population amounts to nearly 3000. Since the completion of the state improvements, the progress of this town has been exceedingly rapid, and its business operations are now considered to be more extensive than those of any place between Harrisburg and Pittsburg. Large quantities of iron and other produce of the surrounding country are shipped here, as well as the bituminous coal of the Allegheny mountain destined for an eastern market. There are five churches, several large hotels, two iron foundries, a steam grist mill, two machine shops, 14 large warehouses, about 1200 rail road cars, and a great number of canal boats.

Williamsburg and *Alexandria* are considerable towns, on the canal, between Hollidaysburg and Huntingdon. *Frankstown* is on the turnpike, three miles east of Hollidaysburg; and *Petersburg* at the mouth of Shaver's creek below Alexandria. *Birmingham* is on the Little Juniata in the north-western part of the county, and *Shirleysburg* in the east, near Aughwick creek. Besides these there are many other villages of less note.

The soil of the valleys is generally fertile, and much of it in a high state of cultivation, producing abundant crops of grain, grass and other agricultural products. The mountains are covered with timber, and yield a plentiful supply for domestic purposes, as well as charcoal for consumption in the numerous iron works of this region.

There are in this county 22 furnaces, producing annually about 16,000 tons of pig iron; 32 forges, manufacturing 15,000 tons of bar iron and blooms; two rolling mills and a nail factory; besides several cupola furnaces for castings. Also seventy grain mills, 182 saw-mills, 9 woollen factories, and a great number of other manufacturing establishments of various kinds. The annual productions of the county, of every kind, are estimated to amount to upwards of \$4,000,000.

For its healthy climate; its mineral resources; the grandeur and sublimity of its scenery; the fertility and diversity of its soil; its

adaptation to the rearing of stock and the production of nearly all the crops which reward the labours of the husbandman, this interior county will compare favourably with most others in the state.

The Pennsylvania canal passes mostly along the banks of the Juniata, from the eastern limit of the county to Hollidaysburg, from which place the Portage rail-road extends to the western extremity. The northern turnpike from Harrisburg to Pittsburg also passes up the valley of the Juniata, and through most of the principal towns. Substantial bridges are erected over the Juniata at Huntingdon, Alexandria and Hollidaysburg; as well as over the other large streams where crossed by the main roads.

By the assessment of 1842, the property taxed for county purposes was valued at \$8,575,139: county tax \$17,149: State tax \$10,417.

The progress of popular education does not seem to be so rapid as the improvements in the agricultural and manufacturing industry of the county. The common school system is, however, generally adopted, and of the 27 districts, 24 have reported to the superintendent that they have a total of 172 schools established under the law, the average period of instruction being a little over four months in the year. There is an academy at Huntingdon; but the higher branches of learning meet with but little encouragement.

The religious denominations are various: Methodists, Presbyterians, Baptists, Lutherans and Catholics are most numerous;—in some of the valleys there are settlements of Dunkards and Mennonists, and in the towns a few Episcopalians. The moral condition of the population, particularly with regard to habits of sobriety and temperance, has greatly improved within the last few years.

The early pioneers of this region were mostly adventurers from the old counties of Cumberland, Lancaster, York and Berks, who pushed their explorations into this then wilderness in quest of game. After the Indians had retired to the west, many of these hunters, attracted by the fertile and beautiful appearance of the valleys, made permanent settlements in them, which became the homes of their children and are still occupied by their descendants. The population is chiefly of Scotch, Irish, and German origin, the latter being generally farmers, and many of them still speaking their own language.

How is Huntingdon bounded? What is the character of the face of the country? What mountains are in the east?—in the south?—in the west? Describe the geological features of the county. In what valleys are the limestone (II) and slate (III) formations? What ore accompanies this limestone? In what other formations is iron ore found and where does it occur? In what series of rocks is hydraulic cement, and another variety of iron ore? To what formation does the iron ore of Hopewell and Trough creek belong? Where is coal found in this county? Describe the course of the Juniata river and its branches—of Aughwick creek. What manufacturing works are on Spruce creek? What is said of Huntingdon, the county town? Where is Hollidaysburg, and what is said of its population, trade and business? What buildings, manufacturing establishments, &c., are mentioned? Where are Williamsburg, Alexandria, Frankstown and Petersburg? Shirleysburg? What is said of the soil of the valleys and its productions?—of the mountains? Mention the different kinds of iron

works and the amount of their products. Mills and factories. What is the estimated value of the productions of this county? What is said of its advantages generally? What canal, rail road and turnpike are in Huntingdon county? Bridges? What is said of the state of education, schools &c.? Mention the principal religious societies, and the improvement in the moral habits of the population. From what counties was Huntingdon chiefly settled, and from what foreign nations are the inhabitants mostly descended?

28. INDIANA COUNTY.

Indiana county has Jefferson on the north, Clearfield and Cambria on the east, Westmoreland on the south, and Armstrong on the west. By the census of 1840, its population was 20,782.

The face of the country is generally uneven and hilly. In the south-east are the northern terminations of the two mountain ranges called Laurel hill and Chestnut ridge, which here appear of diminished elevation, and break away into a series of irregular ridges and hills.

In each of these two mountain ranges, the rocks next below the coal series have been upheaved to the surface on an axis of elevation, and appear on their summits and along their sides; the coal bearing strata resting upon them near the base, or sometimes extending some distance up their acclivities. These lower strata of the coal measures crop out abundantly along the ravines near the base of the two mountain ridges, descending on each side towards the middle of the basin between these anticlinal elevations, where they are deeply covered by superincumbent strata. At Lockport, on the Conemaugh, however, the river cuts so deeply across the basin as to expose all the lower strata down to the sandstone which forms the floor of the coal measures. Ascending from the water level, towards the summit of the hill on the north side of the river, five successive beds of coal are exposed, separated by intervening strata of sandstone, shale, limestone and iron ore. In the deep ravine of Black-lick creek, nearly similar exposures may be observed.

West of Chestnut ridge, the lower coal beds are again seen along the Conemaugh, and in the deep ravines of Two-lick and Yellow creeks, passing deeply beneath the high grounds around the town of Indiana. Further westward, on Crooked creek, and also northward on the Mahoning, coal beds appear which have a higher position in the series.

Along the Conemaugh, in the southern part of the county, salt water is obtained by boring to a depth of from 500 to 800 feet, from which salt is extensively manufactured. The quantity of that article annually made in this county is upwards of 70,000 bushels.

The soil, where not too rough for cultivation, is tolerably fertile, producing fair crops of wheat, oats, grass, &c. Horses, cattle and sheep are raised in considerable numbers by the farmers, and sold to the drovers, who drive them to the eastern markets.

The *Conemaugh* river forms the southern boundary of this county, separating it from Westmoreland. *Black-lick* creek flows westward through the south-eastern part, and falls into the Conemaugh at Blairsville. *Two-lick* and *Yellow* creeks unite their waters and run southward to the Black-lick. *Crooked* creek rises by several branches in the western part of the county, and passes westward through Armstrong to the Allegheny river. In the north is *Mahoning* creek, also a tributary of the Allegheny.

Indiana is the county town, handsomely situated on high ground, nearly in the middle of the county, on the main road from Ebensburg to Kittaning. It contains the usual county buildings, an academy and several churches. Population 700.

Blairsville, on the Conemaugh, is a flourishing town, favourably situated for business, being on the main line of the State improvements, and a depot whence produce may be shipped either eastward or westward, and merchandise received for the surrounding country. There are several branches of manufactures successfully carried on in this place, which has rapidly improved within the last few years: its present population is about 1000.

Saltzburg is a borough containing about 350 inhabitants, situated in the neighbourhood of the salt works, on the Conemaugh below Blairsville.

Armagh is also a borough, with a population of nearly 200, on the turnpike from Ebensburg to Blairsville and Pittsburg, in the south-east of the county.

The northern and eastern parts of Indiana county are thinly settled, being yet covered by extensive forests, containing much valuable white pine and other timber, but little of which has yet been rendered available, owing to its remote situation from any stream of sufficient capacity for rafting. Some, however, is sent down the West branch of Susquehanna, which heads near the eastern limits of this county, and some down the Mahoning, when those streams are sufficiently swelled by freshets to float small rafts.

At an angle in the eastern line of Indiana, where it is joined by the line separating Cambria from Clearfield, is a celebrated station called the Cherry tree, or Canoe place, as the farthest point to which a canoe could be pushed up the Susquehanna. From this point to Kittaning was anciently a famous Indian path, which is yet perceptible in several places on the route. This was also the boundary of one of the purchases of land from the Indians.

The Western division of the Pennsylvania canal extends along the Conemaugh, throughout the whole extent of the southern boundary of this county, greatly increasing the facilities of trade and transportation for the inhabitants. The northern turnpike from Harrisburg to Pittsburg, by way of Huntingdon, Ebensburg, Blairsville; &c., passes through the south-eastern part; and the turnpike from Ebensburg to Kittaning crosses the county in a north-western direction, passing through the town of Indiana.

According to the assessment of 1842, the value of property subject to taxation for county purposes was \$1,932,938: county tax \$5,008: State tax \$2,454.

The common school system, as regulated by law, has been adopted in all of the 14 districts, and 131 schools are reported as being taught about 4 months in the year. The academy at Indiana is reported to contain about 30 pupils; but does not appear to be sufficiently encouraged to render its effect as useful as it might be if properly sustained.

The first settlements in this county were chiefly made by emigrants from Ireland, who suffered great privations and hardships,

in this then remote wilderness. The want of the necessary provisions of life was often severely felt, and to this was added the danger of attacks from hostile Indians, by whom they were sometimes driven from their homes and obliged to seek a place of security on the eastern side of the mountains. Two of the early patriarchs of this region, Fergus Morehead and James Kelly, commenced improvements about the year 1772, by erecting each a log cabin near the place where the town of Indiana now stands. They were much annoyed by the abundance of rattlesnakes, and by wolves and other wild beasts prowling around their cabins at night. One morning Mr. Morehead paid his neighbour a visit, but Kelly was not to be found. Observing traces of blood and tufts of human hair near the cabin, Morehead supposed his neighbour to have been killed by the wolves, and was cautiously searching for his remains, when he discovered Kelly sitting by a spring and washing the blood from his head. He had fallen asleep at night with his head near the side of his cabin, and a wolf had reached through an open space between the logs, and seized him by the head. The aperture was, however, so small as to prevent the wolf from grasping him so far as to have a secure hold, and this saved his life. After remaining here some time, the two adventurers returned to Franklin county for their families, and on their return to Indiana were accompanied by other settlers; but during the first years, grain and most of the necessities of life were transported on horse-back from Franklin and Cumberland counties, there being no wagon road across the mountains. Such were some of the dangers and difficulties encountered by the bold and hardy settlers of our western counties, whose descendants now dwell in peace and security on the same soil, surrounded by plenty, and enjoying not only the comforts but even the luxuries of life.

What counties are adjacent to Indiana? What is the face of the country, and the names of the principal mountain ridges? What valuable mineral productions are found? Where is salt manufactured, and to what amount? What is said of the soil, and of the products of the farms? Mention the principal streams, their situation and direction. Name the county town, and describe its situation. Where is Blairsville, and what is said of it? Saltzburg? Armagh? Describe the northern and eastern part of the county. What is said of a place called Cherry tree? What canal and turnpike roads are in this county? What is the condition of education? By whom were the first settlements made, and what privations and difficulties did they encounter? Name two of the early settlers, and tell the story of Kelly and the wolf. By what means did the first inhabitants procure grain and other necessities of life?

29. JEFFERSON COUNTY.

Jefferson county is bounded north by Warren, east by Elk and Clearfield, south by Indiana, and west by Armstrong, Clarion, and Venango. Population, 7,253.

The surface is generally hilly and uneven, but not mountainous. In the valleys of many of the streams, there are tracts of bottom

land which is very fertile ; much of the upland soil is also tolerably good, but in some places is too rough and rocky for cultivation.

Bituminous coal is found in almost every part of the county ; iron ore also appears in many places, but little has yet been done towards the development of the mineral wealth of this region.

Much of the northern part of this county is still a wilderness, and even in the south the settlements are thinly scattered among immense forests of timber. The staple production is lumber, of which vast quantities are annually floated down the Clarion, Red-bank and Mahoning to the Allegheny river, whence it finds its way to a market at Pittsburg. Within the last few years, however, the cultivation of the soil has received more attention : settlements and farming establishments are multiplying, and the agricultural products of the county rapidly increasing.

The principal streams in this region flow in a south-western direction towards the Allegheny river. The north is watered by the *Clarion* river, which flows across the whole breadth of the county. Towards the south it is also crossed by the *Red-bank* or *Sandy* creek, a large and rapid stream, of sufficient capacity for rafting at high water, and at all times affording power to drive the numerous saw mills erected on its banks. Near the southern line of the county is *Mahoning* creek, also a considerable stream.

But few towns or villages are found in this wild and woody region. *Brookville*, the seat of justice for the county, is situated near Sandy creek, on the Bellefonte and Erie turnpike, and contains about 300 inhabitants. It has a court house, prison, academy, and several stores and taverns. About a mile east of this is Port Barnett, one of the oldest settlements in the county. *Punxsatawny* is a rather pretty village, on Mahoning creek, in the south of the county.

The value of property assessed in 1842 for county taxation was \$867,180: county tax \$5,922: State tax \$1,075.

In a new and thinly settled country, the opportunities for popular education must necessarily be much restricted. The distance which children must travel to reach a school, and the difficulty of collecting a sufficient number to warrant the employment of a teacher, have an unfavourable effect on the progress of general education and intelligence among the youth of our forest counties. Jefferson contains 14 districts, all of which have accepted the provisions of the law regulating the common school system, and 49 schools are reported as being established. The average period of instruction is about $3\frac{1}{2}$ months in the year.

The inhabitants are mostly settlers from other parts of Pennsylvania, with a few Germans and other emigrants from Europe.

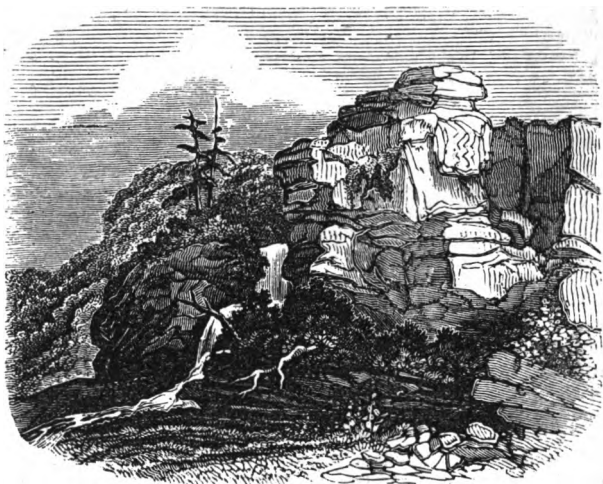
How is Jefferson bounded ? Describe the face of the country and soil ? What valuable minerals are found ? What is said of the forests, the staple productions, and of agricultural improvement ? Mention the principal streams. What is the name and situation of the county town ? What other places are mentioned ? What is said of the opportunities for education, and of the schools ? By whom is the county chiefly settled ?

30. JUNIATA COUNTY.

Juniata county has Union on the north; the river Susquehanna for a short distance on the east; Perry county on the south-east; Huntingdon on the south-west; and Mifflin on the north-west. Population 11,080.

The Tuscarora mountain forms most of the south-eastern boundary, dividing Juniata from Perry; and on the north-west the Shade and Black-log mountains separate it from Mifflin.

For variety and beauty of scenery, few parts of the State can be compared with the banks of the Juniata. The river frequently winds among deep and narrow gorges in the mountains, whose rocky precipices rise abruptly from the shore, with their pine-clad summits towering high above the placid stream, forming singularly picturesque views of wild and savage grandeur: and then, leaving this scene of romantic wildness, it passes through a rich and cultivated valley, whose luxuriant fields, green meadows and well-built farm houses give evidence of an industrious and thrifty population. Busy towns and thriving villages occasionally give life and animation to the scene; but in a few minutes the traveller again finds himself in some rude mountain pass, where all traces of cultivation disappear, and he sees around him nothing but the primitive solitude and desolation of nature, and hears no sound but the roar of the mountain torrent leaping from rock to rock, or madly dashing over some lofty precipice in sheets of white and feathery foam.

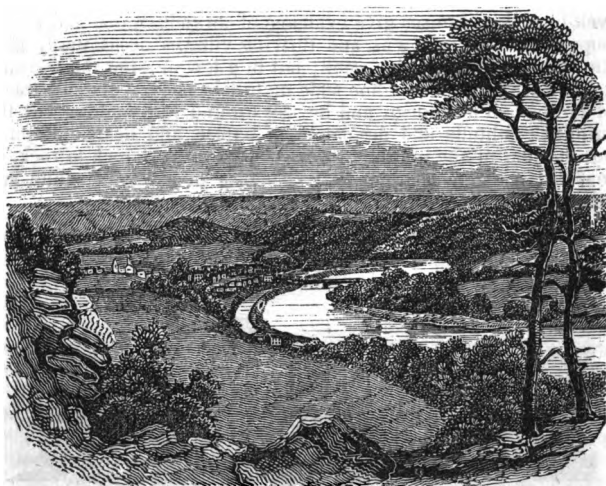


Rocks on the Juniata.

A series of nearly parallel belts of various rock formations range across this county from north-east to south-west, following the direction of the

mountain ridges, and being brought successively to the surface by undulations or lines of elevation and depression. The variegated and red shale (V,) overlying the mountain sandstone, appears along the north-west side of Tuscarora mountain, and again on the Juniata above Mexico, having between these points a belt of the overlying fossiliferous limestone (VI) and sandstone (VII,) as seen between Thompsontown and Mexico, on the turn-pike. A similar belt of this limestone, with the sandstone accompanying, appears at Mifflintown, above which place we find the red and variegated shale formation extending to the foot of Shade mountain. In the valley of Tuscarora creek, a few miles south-west of the Juniata, the fossiliferous sandstone divides into two branches, having between them the overlying olive slate (VIII,) which still further up the valley is itself overlaid by the red shales and sandstones (IX) next in the series.

Much of the soil is productive, and agriculture is the chief occupation of the inhabitants. Wheat and flour are the staple productions. There are about 30 flour and grist mills, 3 woollen factories, and some extensive tanneries.



Mifflintown on the Juniata.

The *Juniata* river passes through the middle part of this county, which is also well watered by numerous smaller streams. *Tuscarora* creek runs north-eastward and falls into the Juniata below Mifflintown, being joined by *Licking* creek. *Lost* creek empties on the north side of the river above Mifflintown, and *Cocalamus* is in the north-east, flowing into Perry county.

Mifflintown is the seat of justice, situated on the north side of the Juniata, and having a population of about 450. It has the usual county buildings; two churches, one Presbyterian and the other Lutheran; and about 100 dwellings. *Mexico* and *Thompsontown* are on the same side of the Juniata, below Mifflintown. *Waterford* is in Tuscarora valley, in the southern part of the county.

The Juniata division of the Pennsylvania canal, and the northern turnpike from Harrisburg to Pittsburg, both extend through this county along the Juniata river, passing through the principal towns, and affording easy means of transportation for the surplus produce of the county, as well as for the reception of merchandise from the commercial cities.

According to the assessment of 1842, the value of property subject to county taxation was \$2,779,121: county tax \$2,779: State tax \$3,022.

The school districts are 9 in number, all of which have accepted the law. The number of schools established is 62, which are open for the instruction of scholars nearly 5 months in the year. Tuscarora academy has about 40 pupils.

The inhabitants are mostly of Irish and German origin. Of the religious persuasions the Presbyterians are believed to be the most numerous.

How is Juniata county bounded? What are the principal mountains? Mention the various rock formations. What is said of the soil and productions? Describe the principal streams. What is the county town and how situated? Name the other towns and their situation. What canal and turnpike pass through the county? What is said of the schools? Of the origin of the inhabitants, and the religious persuasions?

31. LANCASTER COUNTY.

Lancaster county is bounded on the north by Dauphin and Lebanon; on the north-east by Berks; on the east by Chester; on the south by Cecil county in the state of Maryland; and on the south-west by the Susquehanna river, which divides it from York county. It is about 38 miles in length and 30 in breadth; containing an area of upwards of 1100 square miles. Its population by the last census was 84,203, of whom 3,103 were coloured persons.

A large portion of Lancaster consists of a broad and fertile valley, having on the north a range of hills extending from the Cone-wago hills, eastward to the Welsh mountain; and on the south, those which range from Mine ridge westward to the Susquehanna. The valley thus formed is diversified and undulating on its surface; but only sufficiently so to render it the more desirable for agricultural purposes. It is chiefly occupied by a broad belt of limestone, and the soil is rich, loamy, and exceedingly fertile. It is one of the finest agricultural regions in the State, and has been justly called "the garden of Pennsylvania."

This county contains several geological formations. The principal rock in the southern part of the county is talc slate, containing a few occasional beds of mica slate, with some serpentine, and much injected white quartz. The soil of this region is naturally thin and unproductive; but, notwithstanding this defect of quality, much of it has been greatly improved by the liberal use of lime as a manure, which is brought with considerable labour and expense from the limestone valley on the north.

The limestone (II) of the valley is overlapped on the north by a belt of the middle secondary red shale and sandstone, the southern margin of which passes near Churchtown, Ephrata, Litiz and Manheim, reaching the Susquehanna at the village of Bainbridge. In the lower portion of this formation, near the last mentioned place, is a bed of the "calcareous conglomerate," a rock containing imbedded pebbles of variously coloured limestone, which yields a variegated marble susceptible of a high polish, and which might be applied to various ornamental purposes. A similar rock is also frequently found on the upper, or northern side of this red shale formation.

The high bold ridge which is seen in such picturesque beauty on the Susquehanna above Columbia, is of white sandstone (I.) belonging to the next geological formation below the limestone. This ridge extends eastward for several miles, gradually diminishing in height, until it finally sinks below the limestone of the valley. The same sandstone appears in the Welsh mountain in the eastern part of the county, and also in some smaller ridges in other places, where it has been protruded through the limestone.

Extensive ranges of trap rock are found in the Conewago hills, and along the northern border of the county; some ridges and dikes of the same formation also occur in other places.

On Chestnut hill, about four miles from Columbia, is a very extensive and rich deposit of *iron ore*, from which immense quantities are taken for the supply of furnaces in this and the neighbouring counties. It is of the variety termed brown argillaceous ore, and is similar to that which is usually found on the borders of most of the great limestone valleys in the State.

Good *roofing slate* is quarried on both sides of the Susquehanna near Peach Bottom ferry; and in the serpentine associated with the primary rocks in the southern part of the county, *chrome ore* and the *silicate of magnesia* are found in considerable abundance. From the last named mineral, large quantities of Epsom salts (*sulphate of magnesia*) are manufactured in Baltimore.

The principal streams in this county are the *Conestoga*, *Octorara*, *Pequea*, *Chicquesawunga*, *Conoy* and *Conewago*, with their tributary branches, which flowing generally in a south-westerly course, and watering the whole county in every direction, discharge themselves into the Susquehanna river. In the limestone region of this county, as in similar formations elsewhere, many of the smaller streams, after flowing some distance, suddenly disappear, and then running sometimes several miles under ground, reappear again on the surface with increased strength.

The streams above enumerated, together with their branches, afford numerous seats for mills and manufactories. There are within the limits of the county 263 grist and merchant mills, 106 saw mills, a number of oil, clover and hemp mills; fulling and carding mills; 5 rolling mills, 7 furnaces, 13 forges, 3 foundries, 3 tilt hammers, 3 sickle factories, 3 paper mills, 10 woollen factories, one cotton factory, and one card machine factory. Besides those which are driven by water power, there are three foundries in the city of Lancaster and one in Columbia, driven by steam, thus making the whole number of foundries seven.

The city of *Lancaster* is pleasantly situated, nearly in the centre of the county, about one mile west of the Conestoga creek. This city was first laid out in the year 1730, by Andrew Hamilton, the proprietary, under a deed or grant from the heirs of William Penn,

at which time it became the seat of justice for the county and has remained so ever since. It was originally incorporated as a borough in 1742, and in 1777 the ancient corporation was re-established by a special act of the general assembly. In 1818 it was erected into a city under the government of a mayor, recorder, nine aldermen and a select and common council, the former consisting of nine and the latter of fifteen members. It contains about 1,500 houses, which are mostly built of brick, and has a population, according to the last census, of 8,417 inhabitants. The streets are wide and cross each other at right angles, giving to the city an appearance of neatness, elegance and convenience.

Situated in the midst of a rich and populous country, immediately on the Philadelphia and Columbia rail road, communicating with Philadelphia and with the Susquehanna river; with the city of Baltimore, by means of the Baltimore and Susquehanna rail road, and with the Chesapeake bay by means of the Conestoga slack-water and the Susquehanna and Tide-water canal, which thus afford an uninterrupted water communication with Baltimore and Philadelphia—it has consequently become a place of considerable trade and importance. It has manufactories of rifles, hats, combs, &c., an extensive cooking stove foundry, several other foundries and steam engine manufactories, coach and car factories, several large tanyards, breweries and distilleries, together with establishments for the manufacture of thrashing machines, ploughs and other useful articles.

The public buildings are a court house, erected in a square near the centre of the city, from which the four principal streets diverge in opposite directions; a market house, and a large building for the accommodation of the county offices, all of brick; and a strong, though antiquated and inconvenient stone jail, which it is probable will be soon supplied by a new and more convenient one, as efforts are now being made on the part of some philanthropic citizens to effect this desirable object. It has two banks, incorporated in the year 1814, with a capital of \$1,200,000, and another incorporated in 1841, with a capital of \$200,000. There is also a branch of the Bank of Pennsylvania at this place.

There are thirteen places of public worship in the city, viz.: one Presbyterian, one Episcopalian, one Methodist, two Lutheran, one German Reformed, one Moravian, one church of God, (a peculiar sect of Baptists,) one Roman Catholic, one New Jerusalem temple, or Swedenborgians, one Friends' meeting house, (but the members of that society having generally left the place, their meetings have been discontinued for several years,) and two coloured or African churches.

There is also a theatre, and a fine hall erected by the enterprise of the mechanics of the place, called "the Mechanics' Institute," and reflecting great credit upon their spirit and liberality, in which, during the winter season, lectures are maintained for the benefit of the institute. There is an excellent classical and mathematical academy in this city, established by legislative bounty and fostered by the funds of the old Franklin college, under a recent act of as-

sembly. The common school system is in full and successful operation: the schools are kept open eleven months in the year, and facilities are afforded for educating all the youth of the city.

According to the assessment for 1842, the valuation of real estate within the city was \$2,411,990. The State tax on this was \$2,411.99. The personal State tax for the same year was \$2,728.55, making a total paid to the State of \$5,140.54.

The original settlers of this city were English Friends and Episcopalians: but after the lapse of a few years it became the point of attraction to German immigrants, from whom the greater portion of the present inhabitants are descended. Lancaster was formerly the seat of the State government, but in the year 1812 the general assembly passed an act for its removal to Harrisburg.

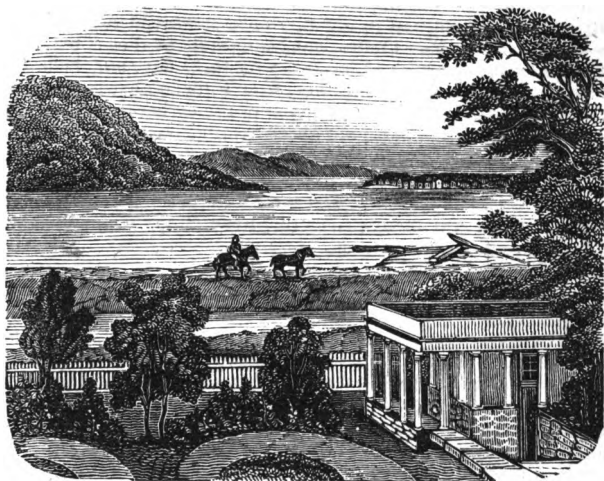
Columbia is situated on the Susquehanna, about ten miles westward from Lancaster, and is built upon the high sloping bank of the river. From its commanding position at the termination of the eastern division of the Pennsylvania canal, and the western termination of the Philadelphia rail road—having communication with Philadelphia and Baltimore by means of rail roads, with the interior of Pennsylvania by means of canals, and with the Chesapeake bay by means of the tide water canal—it has become a place of considerable business. It is the principal depot for the lumber trade of the Susquehanna, and for much of the coal sent from the mines on its tributary streams.

This town was originally laid out by Samuel Wright, in the year 1788, and was incorporated into a borough in 1814. It contains about 400 dwelling houses, a bank, a town hall, and seven places of public worship, viz. Friends, Presbyterians, Methodists, Roman Catholics, German Lutherans, each one,—and two African meeting houses. It has a good brick market house, and an academy also of brick. Columbia is an accepting district under the common school law, and the schools established are well conducted by competent teachers.

There is a noble bridge, a mile and a quarter in length, across the Susquehanna at this town, which was built in 1832-3. The one formerly erected here in 1813-14 was swept away in the spring of 1832 by an extraordinary ice freshet in the river. A rail road track is laid on this bridge, connecting the Philadelphia and Columbia with the Baltimore and Susquehanna rail road. The Susquehanna and Tide-water canal commences opposite to this place, being connected with the Pennsylvania canal by means of a dam thrown across the river a short distance below the town. The population of Columbia, according to the last census was 2,719. The original settlers of the town were Quakers or Friends.

Marietta is built on a beautiful piece of sloping ground, on the east side of the Susquehanna, about 3 miles above Columbia, and one mile above the mouth of Chicquesalunga creek. A considerable trade in lumber is carried on here; but the town does not seem to be in a very thriving condition, though the Pennsylvania canal passes through it, and a good turnpike connects it with Lancaster, Columbia and Harrisburg. It was incorporated into a borough in

1812. It contains a town hall, a market house, an academy, and three places of public worship. Population 1,428.



Susquehanna river below Marietta, from S. S. Haldeman's spring house.

Elizabethtown, is near the mouth of the Conewaga creek, about 18 miles north-west from the city of Lancaster, on the turnpike leading to Harrisburg, and near the Harrisburg and Lancaster rail road. It was made a borough in 1827, and contains a brick market house, a town hall, and four churches. Population about 1500. The first settlers were Germans, and their descendants still inhabit the town.

Manheim, is an ancient and pleasant town, situate on the west side of Chicquesalunga creek, about eleven miles north-west from the city of Lancaster. It was originally laid out in 1762, by a German of considerable wealth, named Henry William Steigle, who erected several furnaces in the neighbourhood, an extensive glass manufactory, and a splendid mansion for his own residence, where he resided in a kind of feudal magnificence until his death. The glass factory has long since gone to decay. The town is in the midst of a fertile country, but has no manufactories. It has four places of worship, and a population of about 400.

Washington, is on the eastern bank of the Susquehanna, about three miles below Columbia. It has little trade except in lumber and coal for the supply of the neighbourhood: there are two places of public worship, and about 300 inhabitants. On the highest point of land in the town is an ancient Indian burial place, which is still religiously preserved by the inhabitants from desecration; and in digging cellars, &c., in the town, it is not uncom-

mon to come upon an Indian grave, with earthen vessels, pipes and other rude articles deposited therein.

Strasburg, is situated in a rich and highly cultivated valley, about 8 miles south-east from the city of Lancaster. It was originally called Bettelhausen by the Germans. This is one of the oldest settlements in the county, being on what is called "the king's old highway," a road leading at a very early day, and before the organization of Lancaster county, from Philadelphia to Conestoga at Postlethwaite's, the scene of most of the earlier treaties between the colonial governors and the aborigines. Strasburg is a pleasant place, though not remarkable for business. The inhabitants are generally well educated and intelligent. The town supports an excellent classical academy, and the common schools are well sustained. There are three places of public worship, for Presbyterians, German Lutherans, and Methodists. Population about 900. It was incorporated as a borough in 1816.

In addition to the towns already mentioned, the county contains many villages of considerable wealth and importance, inhabited by an industrious and thriving population. Among the most prominent of these villages are *Mountjoy*, *Maytown*, *Litz*, *Reamstown*, *Churchtown*, *New Holland*, *Ephrata*, and *Williamstown*.

The agricultural products are chiefly wheat, rye, barley, oats, indian corn, potatoes, grass, live stock, &c. Great quantities of flour are manufactured, and whisky was formerly a considerable article of produce; but since the general prevalence of temperance the number of distilleries has greatly diminished.

The surplus produce is sent to the markets of Philadelphia and Baltimore, to which there is convenient access by rail roads and canals.

This county is well supplied with many varieties of excellent timber: oak, chestnut, hickory, walnut, and ash are the most abundant. The timber finds a ready market at home, for the supply of the furnaces, forges, &c., and for domestic consumption.

Besides the flour, saw, oil, fulling and other mills already enumerated, together with the furnaces, forges, &c., the county, including the city of Lancaster, contains 58 tanneries, 10 breweries, and 117 distilleries. Of the distilleries, however, perhaps not more than 15 are now continued in use: of the 28 in the city of Lancaster, but two are now in actual operation, and they only upon a very limited scale.

The valuation of real and personal estate in the city and county of Lancaster, subject to taxation by the county, in 1842, was \$33,907,409: county tax \$53,132: State tax \$46,615.

Lancaster county is favourably situated with regard to inland and water communication with the north, south, east, and west. The Eastern division of the Pennsylvania canal enters the county at Conewaga creek, the boundary between Lancaster and Dauphin, and continuing down the bank of the Susquehanna, terminates at Columbia, a distance of about 15 miles. At the latter point, the Susquehanna and Tide-water canal commences and continues to Havre de Grace, thus forming an outlet to Chesapeake bay for

the produce of the county. The Conestoga slack-water navigation extends from the Susquehanna river to the city of Lancaster, a distance of 17 miles by the course of the stream, and connects with the Tide-water canal by means of a dam thrown across the river.

The Philadelphia and Columbia rail road traverses the county, from the Chester county line to its termination at Columbia, a distance of about 34 miles, and nearly equidistant from the northern and southern extremities of the county. The Harrisburg, Portsmouth, Mountjoy, and Lancaster rail road branches off from the Philadelphia and Columbia rail road about a mile west of Lancaster city, and passes through the county in a north-west direction for about 20 miles, by means of which a communication is had with the Cumberland valley, the Franklin and other rail roads in the west and south-west.

The Philadelphia and Lancaster turnpike passes through about 20 miles of the county, connecting at Lancaster with the Lancaster and Susquehanna turnpike, which extends to Columbia, 10 miles. It also connects with the Lancaster and Harrisburg turnpike, which extends in a north-west direction to the Dauphin county line, about 20 miles. There is also a turnpike from Lancaster to Marietta, a distance of 12 miles; another called the Harrisburg, Ephrata, and Downingtown turnpike, passing through the northern part of the county in a north-west direction, from the boundary of Chester county to that of Lebanon, about 29 miles. Another turnpike leads from Lancaster to New Holland, 12 miles; connecting with the Conestoga turnpike, which leads from Churchtown to the Berks county line, about 10 miles. The Marietta and Columbia turnpike connects, at Marietta, with another leading up the eastern side of the Susquehanna to Harrisburg, and passes through this county about 14 miles. The Marietta and Maytown turnpike extends from the former to the latter place, a distance of 5 miles. An aggregate amount of over 132 miles of good stone turnpike road, within this county, has thus been constructed at great expense, principally by its own citizens.

The common roads are generally in excellent order, being kept in good repair by the supervisors of the several townships.

The progress of education is beginning to be much encouraged among the mass of the people in this county. There are 31 school districts, of which 18 have accepted the provisions of the law. With the exception of Lancaster city, most of these districts accepted the law soon after its passage. The city became an accepting school district in 1838. Previously to that time it had a peculiar free school system, under a special act of assembly, by which the schools were supported from the county treasury. The common schools in the country districts are kept open, on an average, about six months in the year. In the city of Lancaster, and the accepting boroughs, they are open about eleven months.

There are five classical academies in the county, in which are taught the ancient and modern languages, mathematics, chemistry, natural philosophy, &c. These academies are situated as follows: The Lancaster county academy, in the city of Lancaster;

the Litiz academy at the village of Litiz, a Moravian settlement, 8 miles north of Lancaster; the Mountjoy institute, at the village of Mountjoy, on the Harrisburg and Lancaster rail-road, 12 miles from Lancaster; the Susquehanna institute, at the borough of Marietta; and the Strasburg academy, at the borough of Strasburg.

In the city of Lancaster is Franklin college, founded in 1787, and designed for the education of Germans in their own language and habits. In that year the state endowed it with 10,000 acres of land, worth \$30,000, and the following year added a military store house and two lots of ground in the city, valued at \$2000. This institution was long kept only as a grammar school; but is now, by a recent act of assembly, connected with the Lancaster county academy, in which there are three professors and teachers.

There are in this county 141 places of public worship, as follows: Presbyterians 19, Episcopalians 4, Quakers or Friends 9, Methodists 21, Mennonists 32, Lutherans 17, German Reformed 13, Moravians 3, Seceders 2, Baptist 1, Seventh-day Baptist 1, Albright or Evangelical 3, Roman Catholic 3, Winebrenerites 3, Universalist 1, New Jerusalem or Swedenborgian 1, Free Churches 4, African or Coloured 4.

The first settlements in Lancaster county seem to have been made by a company of French or Swiss Huguenots, who, about the year 1709, established themselves in the valley of Pequea; being kindly received by the Piquaw Indians, with whom they lived for many years in friendship and harmony. In 1718 they were joined by a body of German Mennonists; and the influx of Germans soon became so great as to awaken distrust and apprehension. In 1727, Governor Gordon informed the executive council that "it would be highly necessary to concert proper measures for the peace and security of the province, which may be endangered by such numbers of strangers daily poured in, who being ignorant of our language and laws, and settling in a body together, make, as it were, a distinct people from his majesty's subjects." Happily, however, the good governor's fears on this subject were groundless; for the strangers were soon found to be a quiet and industrious people, and attentive to their civil and religious duties. An act of naturalization was passed in 1729, admitting them to the rights and privileges of British subjects. Great numbers of Irish settlers also established themselves about the same time in the southern part of the county.

In February, 1729, on a petition of "the inhabitants of the upper part of Chester county" setting forth the inconveniences to which they were subjected on account of their great distance from the county town (Chester) and the want of justices, constables, &c.—commissioners were appointed "to run a division line in the county of Chester, and settle the boundaries of a county to be erected in the back parts of this province towards Susquehanna." On a return of the survey being made, it was ordered (May 2, 1729) that the upper parts of this province, described as aforesaid, be erected into a new county by the name of *Lancaster county*." In the same year a loan of £300 was granted by the assembly,

through the influence of John Wright, one of the leading inhabitants in public affairs, for the purpose of erecting a court house and jail in the new county.

About the year 1760, the murders and depredations committed by the Indians became so frequent as to keep the inhabitants in a state of constant alarm. A company of rangers was raised by the settlers to act as a guard upon the frontiers of the county, and prevent incursions from hostile bands of savages. But where the inhabitants were unprotected, or fancied themselves secure, they were attacked at night, and their cabins being set on fire, they were aroused from their sleep by the flames, and murdered by the merciless enemy. That these outrages were perpetrated by Indians could not be denied; but of what tribe or from what quarter they came, was not so easily ascertained. Suspicions were excited against the Christian Indians at Conestoga and the Moravian Indians in Northampton county, who had always shown the most friendly disposition towards the white settlers. An armed band of the inhabitants of Paxton and Donegal townships attacked the Indian village at Conestoga, at a time when most of the men were absent, and inhumanly slaughtered the women, children, and a few old men whom they found in the village. The Indian men, who had been absent at the time when this outrage was committed, were afterwards placed for protection in the prison at Lancaster; but fifty men of the same party who had attacked the village, unexpectedly entered the town on a Sabbath, when most of the inhabitants were at church, forced open the prison and put the Indians to death. So expeditious were they in this affair, and so little vigilance or disposition was shown by the authorities to detect and apprehend them, that they escaped punishment.

How is Lancaster county bounded? What is said of the valley, and of its soil? What kinds of rock are in the southern part, and of what nature is the soil? What formation occupies the country north of the limestone? At what place are large quantities of iron ore obtained? What other valuable mineral productions occur? Mention the principal streams. Mills and manufacturing establishments. How is the city of Lancaster situated and when was it founded? By what rail roads and canals does it communicate with other places? What manufactures are carried on? What is said of the public buildings? Churches? Mechanics' institute? Academies and schools? By whom was this city first settled, and by whom at present chiefly inhabited? In what year was the seat of the State government removed from Lancaster to Harrisburg? How is Columbia situated, and what is said of its trade and business? When was it founded, and what public buildings does it contain? Bridge, rail roads and canals? Where is Marietta, and what is said of it? Elizabethtown? Manheim? Washington? Strasburg? What other places are mentioned? Name the principal agricultural products of this county. Timber. Tanneries, breweries and distilleries. Describe the various canals and rail roads in this county. The turnpike roads. What is said of the progress of education, and of the common schools? Name the several academies. Give some account of Franklin college. Religious societies and number of churches. Where, when, and by whom were the first settlements made in Lancaster county? What people soon followed in great numbers? When was the county erected, and from which of the three original counties was it taken? Relate some of the troubles which occurred with the

Indians. Give some account of the attack upon the Indian village at Conestoga, and the events which followed.

32. LEBANON COUNTY.

Lebanon is bounded on the north-east and east by Schuylkill and Berks; south by Lancaster; and west and north by Dauphin. It contains a population of 21,872.

Being situated mostly within the Kittatiny valley, the physical features and geological character of this county are similar to those of Berks and Dauphin, between which it lies. Along the southern border are hills of sandstone and trap rock, and in the same region we find the middle secondary red shale extending northward from Lancaster into the edge of Lebanon. North of this is a broad belt of the valley limestone (II,) extending to a line nearly parallel with, and a little north of the Reading, Lebanon and Harrisburg turnpike, where it joins the slate formation (III,) the next member of the series. Within the range of this slate, in Lebanon and the western part of Berks counties, thin strata of limestone frequently occur, and belts of the slate are observed which are red, brown and yellow, thus differing from the general dark bluish colour of this formation. In the northern part of the slate region are some thick beds of coarse gray sandstone, occasionally containing imbedded pebbles. These may be observed in the hills on both sides of the Swatara creek, about three miles above Jonestown. Near Jonestown, on the south, are hills of trap rock, the influence of which has produced some curious and interesting modifications in the geological features of the neighbourhood.

The northern part is mountainous. Proceeding northward from the Blue mountain, to the county line on the Fourth mountain, we pass, in succession, over the intermediate formations between the sandstones of the Blue mountain (IV) and those of the Second mountain (X). In the valley of Stony creek is the red shale (XI,) and above it, in the Third and Fourth mountains, the pebbly conglomerate and sandstone (XII) next below the coal. In the narrow trough between these two mountains is the extended south-western point of the Pottsville coal basin.

Magnetic iron ore is found among the hills in the southern part of the county: it is mined at Cornwall, where specimens have been obtained yielding 70 per cent. of metallic iron. Indications of other varieties of iron ore occasionally appear, and in the limestone formation argillaceous and pipe ore has been dug in several places.

Lebanon, though one of the smaller counties of the commonwealth, is distinguished for the fertility of its soil, and the value of its agricultural productions. The limestone land is generally considered the best; but in the calcareous portions of the slate formation there are many excellent and highly productive farms. Wheat, rye, indian corn and oats, are the principal grains cultivated, which, together with potatoes, hay, pork, beef and live stock, constitute the staple productions. The surplus produce is sent by way of the Union canal, eastward to Philadelphia, or westward to the Susquehanna. Several furnaces and forges are situated within the county, at which a considerable quantity of iron is made. Various other manufactures are carried on, chiefly for home supply.

The largest stream is the *Swatara*, which issues from the mountains in the north and flows southward to Jonestown, where it receives a branch from the eastward called the *Little Swatara*. Then

turning westward, it flows by a winding course into Dauphin county, and falls into the Susquehanna at Middletown, nine miles below Harrisburg. *Quitapahilla* creek rises near the town of Lebanon and runs westward to the Swatara, into which it empties near the Dauphin county line. Another branch of the Swatara is *Indian* creek, which flows southward from the mountains in the northern part of the county. The *Tulpehocken* rises east of the town of Lebanon, and flows eastward into Berks county towards the Schuylkill. All these, together with many smaller streams, afford a great number of excellent mill seats, and many good mills are in operation at which flour is extensively manufactured.

Lebanon, the seat of justice, is a pleasant town, beautifully situated in a rich and populous neighbourhood, on the turnpike, 24 miles east of Harrisburg and 28 west of Reading. It is an incorporated borough, and contains 1,860 inhabitants. The buildings are chiefly of brick or stone, the streets regularly laid out, and the whole town has a neat and pleasing aspect. It contains a handsome brick court house, a stone prison, a bank, an academy, and several well built churches. The Union canal passes along the northern side of the town, adding much to its facilities for business.

Jonestown is a considerable village on the Swatara, in the northern part of the county. *Myerstown*, on the turnpike 6 miles east of Lebanon; *Annaville* and *Palmyra* on the same road, the former 5, and the latter 10 miles west of Lebanon, are the other principal villages.

The assessed value of property subject to taxation for county purposes, in 1842, was \$8,761,450: county tax \$15,019; State tax \$12,770.

A good stone turnpike, leading from Reading to Harrisburg, crosses Lebanon county from east to west. Another turnpike branches from this near Hummelstown, in Dauphin county, and passing through the south-western part of Lebanon, extends by Ephrata in Lancaster, to Downingtown in Chester county. The common roads are generally kept in good order.

The Union canal passes through the whole length of the county from east to west, and has greatly increased the means of trade. The summit level, between the waters of Tulpehocken and Quitapahilla creeks, has been deeply excavated through the limestone rock, and lined with plank to prevent leakage. This level is chiefly supplied with water raised by artificial means from the Swatara, and conducted, partly in hollow hooped trunks, several miles to the canal. Water is also raised from the Quitapahilla, near the town of Lebanon, by steam power, and conducted to the canal. An important branch of this navigation passes up the Swatara, through the northern part of Lebanon, to Pine Grove in Schuylkill county, by which large quantities of coal are brought from the mines in that neighbourhood.

The state of education is by no means flourishing, not being sufficiently encouraged by the people in general. The importance of a proper education of youth, and its influence upon the habits and character in after life, do not seem to be well considered or

properly understood where the acquisition of wealth is deemed of much more importance than the cultivation of the mind. Ten school districts are included in the county, of which only three have adopted the common school system. There is an academy and a female seminary at Lebanon, each reported to contain about 40 pupils.

The Lutherans are the most numerous religious denomination : there are about 20 churches in the county, several of which are large and well built edifices.

The population consists almost exclusively of Germans, who generally use their own language, though most of them are able to speak English. They are a frugal and industrious people, generally devoted to the culture of their farms, the abundant products of which supply them with most of the necessities and comforts of life. Much of their clothing is of their own manufacture, and foreign luxuries find but little encouragement among a people accustomed to supply their wants by the productions of domestic industry.

How is Lebanon county bounded ? What is said of its physical features and geological character ? In what parts of the county are limestone and coal ? Where is magnetic iron ore found ? What other varieties of ore occur, and where ? For what is this county distinguished ? What is said of the soil ? Mention the staple productions, and how sent to market. What is said of iron works and manufactures ? Describe the situation and course of the Swatara. Quitapahilla. Indian creek. Tulpehocken. What is the name of the county town and how situated ? Mention the other towns and their situation. What turnpikes are in this county ? Describe the Union canal and how supplied with water. What is said of the state of education ?—of the schools and academies ? What religious society is most numerous and what is said of the churches ? What is said of the population and of their habits ?

33. LEHIGH COUNTY.

Lehigh county is bounded on the north by Carbon, east by Northampton, south-east by Bucks, south-west by Berks, and north-west by Schuylkill. Population, by the census of 1840, 25,787.

The face of the country, soil, and geological features are similar to those of the other counties which lie chiefly within the Kittatiny valley.

In the south-east are the hills and ridges belonging to the South mountain range, of primary formation, with some narrow valleys of limestone between them ; then the white sandstone next to the primary rocks ; north of this a broad belt of the valley limestone ; and then the dark slate which extends to the sandstone of the Blue mountain on the northern boundary.

Iron ore is abundant : the magnetic variety is found on the hills in the southern part of the county, but has not been mined to much extent : brown argillaceous ore occurs in many places near the edge of the limestone formation at the base of these hills, particularly along their northern side. Some of the most productive mines, however, are in the limestone range, in the neighbourhood of the Lehigh river, north of Allentown ; and others near the junction of the limestone with the slate, towards the northern part of the county.

Roofing slate of good quality is found near the Lehigh, where a large quarry of it has been worked for several years. The lower beds of slate, adjoining the limestone, in the neighbourhood of Siegfried's bridge, yield good hydraulic cement. Near Trexlerstown, eight miles south-west from Allentown, is an iron mine from which, in addition to the ore, an earth is obtained, so highly charged with sulphuret of iron, as to be advantageously used for the manufacture of copperas. Considerable quantities of it are transported to Philadelphia, by the canal, for this purpose.

In those parts of the county where limestone prevails, the soil is excellent and very productive; the slate region is less fertile; and the gneiss rocks of the southern hills are covered with a soil which, though rough and stony, well repays the labour of cultivation.

The *Lehigh* river forms most of the eastern boundary, until, near Allentown, it turns to the eastward and flows into Northampton. The other principal streams are *Saucon* creek in the south-east, *Little Lehigh* in the south, and *Jordan* creek, flowing south-eastward through the middle of the county, and falling into the Lehigh near Allentown. The county is tolerably well watered for agricultural and manufacturing purposes, most of the larger streams affording good mill seats in sufficient number.

Allentown is the seat of justice, handsomely situated on high ground, a little west of the Lehigh river, and commanding a fine prospect of the surrounding country. The houses are mostly of brick or stone, the streets wide and convenient, and a general air of comfort and prosperity is apparent in the place. It is an incorporated borough and contains 2,493 inhabitants. The public buildings are a court house, a prison, a bank, an academy, a large and handsome building erected for a homoeopathic college, and several neat churches. The town is supplied with water from a large spring at the foot of the hill on which it is built. A pump, worked by a water wheel turned by the stream, raises the water into a reservoir in the highest part of the town, from which it is distributed by pipes laid through the streets. A considerable trade is carried on here in lumber brought down the Lehigh, and in country produce. The county contains also a number of villages, the largest of which are *Emaus*, *Millerstown*, *Trexlerstown* and *Fogelsville*.

The most important productions are those of agriculture. In a fertile region like this, an industrious population naturally look to the tillage of the soil as their surest dependence for support and profit. Considerable progress has, however, been made in many branches of manufacturing industry, and the developement of the mineral resources of the county has not been neglected. The iron ore of this region supplies material for the operation of several furnaces, one of which has been lately erected on the Lehigh, three miles north of Allentown. It is of large size, and constructed expressly with a view to the smelting of iron with anthracite coal by means of the hot blast. The water power is supplied from the canal of the Lehigh Coal and Navigation Company, and the furnace, together with the blowing and air-heating apparatus, is con-

structed in a superior manner. It has been in successful operation since the summer of 1840.

Assessed valuation of property subject to county taxation, for 1842, \$10,766,248; county tax \$13,947; State tax \$6,943.

The roads and bridges are generally good, and kept in a state of creditable repair: there are several bridges across the Lehigh, and one over Jordan creek at Allentown, a large and expensive stone structure, handsomely designed and well executed.

The improvements constructed by the Lehigh coal and navigation company have been of inestimable value to the people of Lehigh county, by affording a cheap and ready means of transportation for produce and merchandise, as well as a considerable home market. By means of this navigation a large amount of their surplus provisions, flour, hay, &c., is sent up the river to Mauch Chunk and the timber region above; while that which is destined for the Philadelphia market is sent downwards to Easton, and thence by canal to Bristol and Philadelphia, merchandise being brought back in return.

In Lehigh, as in most of the other German counties of Pennsylvania, the people have not been distinguished for their attention to the cause of education. There are fourteen school districts, of which only four have accepted the common school system under the law. The academy at Allentown is reported to contain about 50 pupils; but it is believed that the higher branches of education are not much encouraged.

Lutherans, Presbyterians, and Moravians are the prevailing religious denominations. Most of the inhabitants are descended from German families, and the German language is generally used throughout the county. A majority of the people, however, understand English, and are able to speak it when necessary to converse with persons who do not speak German.

By what counties is Lehigh bounded? Describe the several geological formations. What varieties of iron ore occur, and in what places? Where are the slate quarries? In what places are hydraulic cement and copperas earth found? What is said of the several varieties of soil? What river is in this county? Name the other principal streams and their situation. Describe the county town. How is it supplied with water? What trade is carried on here? Mention the principal villages. What are the most important productions? Describe the furnace on the Lehigh above Allentown. What is said of the roads and bridges? Mention some of the advantages derived by the people of this county from the works of the Lehigh Navigation Company. What is said of the state of education? Name the principal religious societies. From whom are most of the inhabitants descended, and what language is generally spoken?

34. LUZERNE COUNTY.

Luzerne county has Wyoming and Susquehanna on the north; Wayne on the east; Monroe on the south-east; Carbon and Schuylkill on the south; and Columbia and Lycoming on the west. The population of Luzerne, by the census of 1840 was 44,006; but Wyoming county having been since taken from it,

with a population of nearly 11,000, leaves Luzerne with about 33,000 inhabitants.

The surface is generally mountainous; much of it is wild, rough and uncultivated; but many of the valleys have a fertile soil and are improved with well-tilled and productive farms. The bottom lands along the river, and most of the region known as the valley of Wyoming, have an excellent soil and constitute a beautiful and productive agricultural district.

Wyoming valley, including that of Lackawana, is a long elliptical basin, bounded by high mountain ridges on the south-east and north-west sides, which, uniting at the two ends, enclose the valley in the form of a canoe. The average height of the ridge on the south-east is about 1000 feet, and of that on the north-west about 800. The range on the south-east is called Wyoming mountain in the south and Moosic in the north; that on the north-west is called Lackawannock, Shawney, Nanticoke, &c., in different parts of its course. The length of the valley, from its extreme south-western point on the Susquehanna below Nanticoke, to its north-eastern extremity on the Lackawana above Carbondale, is nearly 70 miles, and its average breadth about 5 miles. It constitutes a separate coal field, the mountains which enclose it containing the formations which immediately underlie the coal series, with their rock strata inclining towards the middle of the valley, thus forming a trough or basin in which the coal measures are contained.

The first ridge along both sides of the valley usually contains the pebbly conglomerate rock (XII) which lies next below the coal; beyond this is a red shale (XI) commonly appearing in a depression or sometimes in a little valley between the first and second ridges; and outside of this is the hard, coarse, gray sandstone (X) which forms the main ridge of the enclosing mountains. This is succeeded by a broad encircling belt of the red shales and sandstones (IX) next beneath, which spread out on the west as far as to the North mountain, being divided, however, on the south-west by an axis containing a pointed belt of the underlying olive slate (VIII), passing north-eastward from Columbia county, and terminating east of Harvey's lake. The anticlinal axis prolonged eastward from Montour's ridge, brings up another belt of the olive slate, which extends eastward from the river at and above Berwick, up the Wapwallopen valley, sinking away to the east under the red shales and sandstones (IX) of the next superior formation. These red rocks, dipping southward, stretch along the north side of Nescopeck mountain, which is capped with gray sandstone (X,) having south of it, in Nescopeck valley, a red shale (XI) reaching to Buck mountain, on which is the conglomerate rock (XII) dipping southward beneath the strata of the middle anthracite coal field, a considerable portion of which is within this county. The mines of the Hazelton, Laurel hill, Sugar-loaf, Buck mountain, and other companies, are near the line dividing Luzerne and Carbon counties.

Sugar-loaf and M'Cauley's mountains are two abrupt elliptical elevations rising from the red shale of Nescopeck valley, and capped by the overlying hard pebbly conglomerate rock. On M'Cauley's mountain is a separate segment of the coal basin, curiously cut off from the main coal field on the south, by the denudation of the valley between this and Buck mountain, where the rocks have been worn down to the red shale and carried away; leaving this fragment of the basin resting high upon the summit of the mountain to the north.

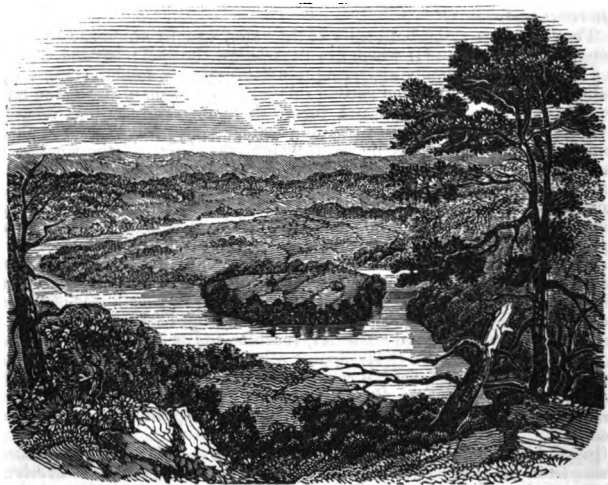
The coal beds of the Wyoming valley are far from lying in a regular and uniform position in the basin, but have been much tilted and thrown out of place by a series of disturbances, which has so confused them that it is by no means an easy task to trace and identify particular beds throughout the valley, or to ascertain their whole number. There would appear, however,

to be not less than 12 or 15 separate seams, of from three to twenty-six feet thick; the largest mass being the great bed worked at the mine of the Baltimore company, which, in some places, including a few thin bands of slate, measures 32 feet in thickness.

Coal is mined at many places along the valley, from the neighbourhood of Nanticoke as far up as the mouth of Lackawana, being sent on short rail roads to the North branch canal, down which it is shipped to a market. In that part of the valley which extends up the Lackawana, though coal is also abundant there, but little is mined except for domestic purposes; there being no canal or rail road by which it can be conveniently transported. But at Carbondale, near the upper end of the valley, the improvements constructed by the Delaware and Hudson Canal Company afford a means of transportation to New York, and coal to the amount of more than 200,000 tons is there annually mined, and sent on the company's rail road and canal to Rondout on the Hudson river.

Iron ore has been discovered at some places on the borders of the valley; a blast furnace has been erected on Roaring brook, east of the Lackawana, and another on Toby's creek, on the west side of the valley.

The North branch of Susquehanna enters this county from the north, having a course to the south-east, until it breaks through the mountain on the north-west side of Wyoming valley at the Dial knob, about ten miles above Wilkesbarre. Having entered



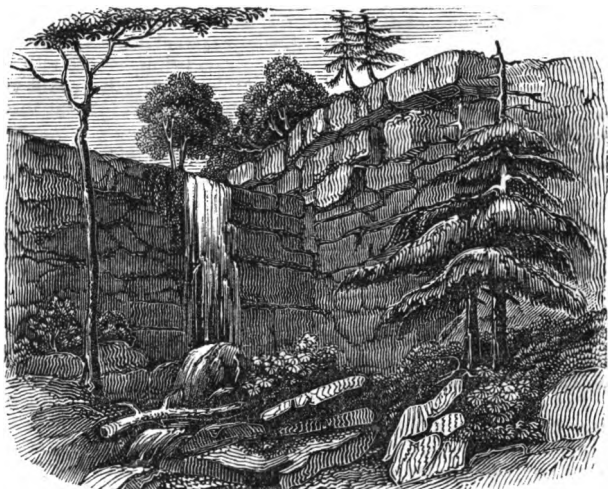
Wyoming valley, from Dial mountain.

the valley through this gap, it receives the waters of the Lackawana, which flows from the head of the valley in a south-western direction. After their junction the Susquehanna turns to the south-west and flows nearly through the middle of the valley to Nanticoke, where it breaks through the ridge of conglomerate rock called Nanticoke mountain, and passes out of the coal valley into the narrow trough in the red shale between the Nanticoke and Shickshinny mountains. Continuing in this to the mouth of

Shickshinny creek, the river there suddenly turns to the south, and cuts directly across the lower end of the coal basin, leaving a small portion of the extreme western point exposed at Beach's mine, in Rocky mountain, on the west side of the river.

The *Lehigh* forms part of the eastern boundary, and divides Luzerne from Monroe and Carbon. The principal creeks are *Nescopeek* and *Wapwallopen*, flowing westward to the Susquehanna, in the southern part of the county; *Huntingdon* creek in the southwest; *Shickshinny*, *Hemlock* and *Harvey's* creeks, emptying on the west side of the river below Wilkesbarre; and *Spring-brook* and *Roaring-brook* on the east side of Lackawana. *Bear*, *Pine* and *Wright's* creeks are tributaries of the *Lehigh*.

Harvey's lake is a beautiful sheet of water, about three miles in length, situated 15 miles north-west from Wilkesbarre, on the border of the wild uninhabited region of the North mountain. Deer and other game are abundant in the neighborhood, the lake affords excellent fishing, and is frequently visited by parties of pleasure from Wilkesbarre and other places. There are a number of other lakes and large ponds, among which are two very beautiful, called Upper and Lower Crystal lakes, lying in the north-east corner of Luzerne, near Dundaff, in Susquehanna county. Some of the



Falling Spring at head of Wyoming valley.

streams are precipitated over perpendicular ledges of rocks, forming beautiful cascades and water falls, which lend additional charms to the romantic scenery around them. One of these, called Falling Spring, on the east side of the river above Pittston, is a considerable natural curiosity. The water is precipitated over a high and nearly perpendicular cliff, descending in a sheet of

snowy foam, which from a particular direction may be seen at the distance of several miles.

Wilkesbarre is the county town, pleasantly situated in Wyoming valley, on a level plain which here forms the eastern bank of the Susquehanna. The town is regularly laid out, having in the middle a public square on which are erected the court house, county offices and prison; there are also several well built churches, an academy and a bank. A neat and substantial bridge crosses the river here, connecting with Kingston on the western shore. A large rolling mill has been recently erected near the town, and several other establishments for various branches of manufacturing industry are in successful operation. The number of inhabitants contained within the borough is 1,718. Few places in Pennsylvania offer a more desirable place of residence than Wilkesbarre. Situated in a fertile and healthy valley, on the banks of a noble river, and having a navigable canal passing through it, it combines the means of comfort and the prospect of actual business. Surrounded by mountains, and all the charms of the most delightful and picturesque scenery, with intelligent and hospitable society, its attractions are such that visitors usually leave it with regret.

Carbondale is a flourishing place, containing about 2,400 inhabitants, which has sprung up within a few years at the coal mines, near the upper end of the Lackawana valley, at the western termination of the rail road from the Lackawaxen canal at Honesdale.

Pittston is on the east side of the river, below the mouth of Lackawana, about nine miles above Wilkesbarre. Kingston and New Troy are on the west side, the former opposite Wilkesbarre, the latter 4 miles above.

Whitehaven is on the Lehigh, 25 miles above Mauch Chunk; and Stoddartsville is on the same river, at the Falls, 13 miles above Whitehaven.

Besides the value of the various agricultural products of Luzerne, more than 250,000 tons of coal are annually mined and sold; and lumber is produced from the forests valued at upwards of \$200,000. Iron, leather and various other manufactured articles are also produced.

The assessed valuation of property subject to taxation for county purposes, in 1842, (including the new county of Wyoming) was \$6,702,198: county tax \$15,396: State tax \$3,263.

The North Branch division of the State canal passes along the river from the south-western line of the county, near Berwick, to the line which separates Luzerne from Wyoming on the north; being navigable to the mouth of the Lackawana, and above that in an unfinished condition. A rail road of about 20 miles is nearly completed from Wilkesbarre to Whitehaven, which will connect the North Branch canal with the Lehigh navigation. The rail road from Carbondale to Honesdale is partly in this county; and rail roads are also laid from the principal coal mines in Wyoming valley to the canal.

The turnpike from Philadelphia to Wilkesbarre, by way of Bethlehem and Nazareth, enters the county at Stoddartsville on the Le-

high, and passes thence across the mountains to Wilkesbarre, from which another turnpike leads up the river, and extends by Tunkhannock and Montrose to Owego in the state of New York. The Milford and Owego turnpike crosses the north-eastern corner of the county, passing by Carbondale. Another road, commonly called the Drinker turnpike, branches from the Easton and Belmont turnpike and passes through the north-east of Luzerne, leading to the Great Bend. The southern part of the county is crossed by the turnpike from Mauch Chunk to Berwick.

In the more settled parts of the county schools are well supported, and a general attention is paid to the subject of education. There is an academy and a flourishing female seminary in Wilkesbarre, besides a number of well conducted schools. The whole county, including that portion which is now the county of Wyoming, has 38 school districts, of which nearly all have adopted the common school system as established by law. In 30 of these districts 214 schools are established, which are open for instruction during more than six months of the year, on a general average.

The history of the beautiful valley of Wyoming presents us with many a wild tale of both savage and civilized warfare: many a scene of fierce contention, horrible cruelty and unexampled suffering has occurred in that now happy and peaceful region. It has become classic ground,—sung by poets and celebrated by historians,—and is no less rich in story than in natural beauty and mineral resources. Its soil has been moistened by the blood of those who have from time to time contended for the possession of so desirable a spot; not only have savage tribes there battled with each other, and then the Indian against the white man; but the only civil war that disturbed the peace of Pennsylvania, under the colonial government, occurred here between the Pennsylvania and Connecticut settlers.

Shawanese, Delawares, Nanticokes and other Indian tribes were the occasional possessors of the valley, which seems at all times to have been a favourite place of abode with these children of the forest. The women cultivated corn upon the plains, the men traversed the surrounding mountains in pursuit of game, and the river supplied them with fish. The first white man who visited Wyoming is believed to have been Count Zinzendorf, a Moravian missionary, who came here in 1742 on a religious visit to the Indians. These unlettered sons of the wilderness, however, could not understand or appreciate the motives of a man who would come so far, and encounter so many dangers, for the sole purpose of instructing them in the means of obtaining happiness after death, and that too without requiring any compensation for his trouble and expense. They naturally supposed his real object to be concealed, and that he desired to obtain their lands, or to examine their country with a view to future conquest. It was resolved to assassinate him privately, and those who had undertaken the commission of the act approached his tent quietly, and found him writing by a small fire which the cool air of Septem-

ber had rendered necessary for his comfort. A blanket, hung upon pins, formed the door of the tent, and the Indians, approaching softly, and slightly removing the curtain, saw the venerable man deeply engaged in his studies. At this moment a large rattlesnake, which had been lying in the weeds not far from the fire, in order to enjoy its warmth more effectually, crawled slowly into the tent, and passed over one of the missionary's legs as he lay reclined on the bundle of dry weeds which formed his bed, so much engrossed with the subject of his thoughts that he neither noticed the snake nor the approach of the Indians. Upon seeing this, even the heart of the savage shrank from the idea of taking his life under such circumstances, and quitting the spot, they hastily returned to the town and informed their companions that the Great Spirit protected the white man, for they had found him with no door but a blanket, and had seen a large rattlesnake crawl over his legs without attempting to hurt him. This circumstance, together with the arrival of a person soon after who was esteemed by the Indians and who knew Zinzendorf, procured him their friendship and confidence, and probably contributed essentially towards inducing many of them afterwards to embrace the Christian religion.

The contention which so long subsisted between the citizens of Connecticut and Pennsylvania, and which caused so much blood to be spilled at Wyoming, originated in an interference of the territorial claims of the respective parties. Strange as it may appear at the present day, this region was claimed by Connecticut as being within the limits of its charter as granted by the English government, and in 1753 a company was formed in that colony for the purpose of making settlements at Wyoming. In 1762 about 200 persons from Connecticut arrived, and established themselves on the east side of the river about the mouth of Mill creek, a little above the place where Wilkesbarre now stands. They lived in friendship with the Indians and soon extended their settlements to the west side of the river. This state of peace was, however, of short duration; for the settlement was suddenly attacked by the savages; about 20 persons were killed and the rest fled to the mountains, making their way, almost destitute of provisions, through a wilderness of 60 miles, to the settlements on the Delaware.

The proprietor of Pennsylvania, having purchased this territory from the Indians, granted the lands at Wyoming to certain persons who in 1769 took possession of them, together with the improvements made by the Connecticut people that had been driven away by the Indians. In the same year 40 new emigrants from Connecticut arrived, who, after much contention and difficulty with the Pennsylvania settlers, were most of them arrested and taken to Easton, but were afterwards liberated. Soon after 200 more came from Connecticut, who built a fort for their defence and prepared to resist the authorities of Pennsylvania. A series of skirmishes, and at length of open warfare between the rival bodies of settlers succeeded; armed forces were sent by the proprietary government of Pennsylvania to dispossess the Connecticut people: a

number were killed on both sides, and this civil contention lasted until the breaking out of the revolutionary war exposed both parties to a common danger.

In 1776, a new era commenced in the history of the American colonies, and the revolution having annulled the authority of the proprietaries and royal governors of Pennsylvania, a brief interval of peace was enjoyed by Wyoming, even in the midst of war. The population at this time numbered about 5,000, and their militia 1,100; of these about 300 enlisted to serve against the common enemy. The frontier settlements were at this time harassed by bodies of British and Indians from Canada, and in the spring of 1778, a force of 800 men, British regulars, Tories and Indians, under the command of Col. John Butler, assembled at Niagara and marched against Wyoming. The Indians were about 400, commanded by Brandt, a warlike chief of mixed blood. From Tioga point this expedition floated down the Susquehanna on boats and rafts, to within about 20 miles of Wyoming fort. Here they landed in the latter part of June, and on the second of July took possession of a fort which the settlers had built near the upper end of the valley, called fort Wintermoot.

Upon the arrival of these hostile forces the settlers collected the most active of their men, to the number of three hundred and sixty-eight, in a fortification on the west bank of the river, about three miles above Wyoming fort. This had been built and defended by forty of the settlers during the previous troubles, and had thence obtained the name of "Forty Fort." Messengers were sent to the commander of the Continental army, with intelligence of their situation, and a request for assistance. The prospect of receiving aid was, however, extremely uncertain, and it was resolved by the party in Forty Fort, to march out and attack the enemy. On the morning of the third of July, they left the fort and began their march up the river, under the command of Col. Zebulon Butler. Having proceeded about two miles, they halted and sent forward scouts to ascertain the position of the enemy, who were found occupying fort Wintermoot, and carousing in fancied security. On their return the scouts fell in with two strolling Indians by whom they were fired upon, and the fire returned by them without effect. The party of settlers immediately marched to the attack, but the two Indians had given the alarm, and the enemy were found drawn up in order of battle, their line extending from the river to a swamp on the west, and their numbers much superior to that of the advancing party. The ground between the river and the swamp was covered with pine woods and bushes, which prevented the movements of the parties from being quickly discovered or well ascertained.

The battle commenced at about forty rods' distance, and continued for fifteen or twenty minutes, through the woods and brush, without much execution. In a short time, Brandt and his Indians having penetrated the swamp, rushed with savage yells upon the left flank of the settlers' line, many of whom fell and were immediately cut to pieces with the tomahawk. Col. Deni-

son, who commanded that portion of the settlers, finding that the savages were gaining his rear, gave orders to fall back, in order to prevent being surrounded by the enemy. This being understood to mean a retreat, the troops began to retire in much disorder, and the Indians, considering it as a flight, rushed on with their rifles and tomahawks, shooting and cutting down the retreating settlers, and the rout soon became general throughout the line. The settlers fled in every direction, pursued by the savages, who killed or took prisoners all who came within their reach. Some succeeded in reaching the river and escaped by swimming across: others fled to the mountains, and at length the Indians, turning their attention to plunder, gave up the pursuit. When the news of the loss of this battle reached the village of Wilkesbarre, the women fled with their children to the mountains, and sought their way through the wilderness to the settlements on the Delaware, where many of them at length arrived after suffering extreme hardships. In the battle about three hundred of the settlers were killed or missing, and from most of the missing no intelligence was ever afterwards received. A number of those who escaped the massacre, together with their women and children who were unable to travel on foot, took refuge in Wyoming fort, which on the following day surrendered to the combined force of British and Indians.

By the terms of capitulation, the settlers, upon giving up their fortifications and military stores, were to remain in the country unmolested, provided they did not again take up arms; but these conditions were entirely disregarded by the British and Indians, and after the fort was delivered up, all kinds of barbarities were committed by them. The village of Wilkesbarre, then consisting of 23 houses, was burnt; men and their wives were separated from each other and carried into captivity; their property was plundered and the settlement laid waste. The remainder of the inhabitants were driven from the valley, and compelled to proceed on foot sixty miles through the pine swamps, almost without food or clothing. A number of the women and children perished in their journey through the wilderness; some of the men died of their wounds, others wandered from the path in search of food and were lost; the wild, dark and desolate region through which they passed being called by the survivors "the shades of death," a name which it has since retained. A melancholy remnant, only, of the population of Wyoming thus reached the settlements on the Delaware, from which they proceeded to their former homes in Connecticut.

An army of two thousand five hundred men, under the command of General Sullivan, was sent to drive the British and Indians from Wyoming; the latter retired up the Susquehanna and were followed by Sullivan, who overtook and completely routed them near Newtown, on the Tioga river. After destroying a number of Indian villages, and laying waste their country, the general returned with his army to Easton.

Danger from the Indians being thus in a great measure removed,

the surviving inhabitants returned to their possessions at Wyoming, and being joined by many others, their settlement again flourished, and the village was rebuilt. They still refused, however, to acknowledge the authority of Pennsylvania, or to be governed by her laws; and on the application of that State to Congress, a board of commissioners was appointed to determine the dispute between Pennsylvania and Connecticut concerning the jurisdiction of the territory in question, who, after a deliberation of five weeks, unanimously decided that the state of Connecticut had no right to the land in controversy. But though the Connecticut settlers were now willing to acknowledge the jurisdiction of Pennsylvania, they refused to yield up their farms and improvements to the Pennsylvania claimants, and a scene of trouble and contention between the different parties ensued, in which resort was again had to arms, and a number of persons were killed. The civil authorities of Pennsylvania were resisted, and the armed companies sent to sustain them were met and repelled by armed bodies of the Connecticut settlers. At length, after a long and harassing contention, a compromise was effected; seventeen townships being granted to the Connecticut people, on condition of their relinquishing all claims to any other lands within the purchase of the original Connecticut Susquehanna Company, and compensation being made to the Pennsylvania claimants. Thus at last ended the Wyoming controversy; the New England settlers and their descendants became industrious and valuable citizens of their adopted state, and having now become blended with the general family of the commonwealth, they enjoy, in their blooming, beautiful and busy valley, the blessings of peace, plenty and prosperity. They are not, however, forgetful of the perils and sufferings by which their fathers established themselves in that favoured spot, and have erected a monument on the battle ground of the "Massacre of Wyoming," over the bones of the unfortunate sufferers in that melancholy tragedy, to commemorate the deeds of that eventful day, and to show to future generations the spot where their forefathers fought, bled, and died in defence of their families and homes.

How is Luzerne bounded? What county has recently been taken from it? What is the character of the surface and soil? By what mountains is the Wyoming valley surrounded? What is the geological structure of this valley? Describe the range of the several rock formations. What is said of Sugar-loaf and M'Cauley's mountains? Give some account of the coal beds in Wyoming valley? At what places is coal mined and how conveyed to the canal? Where is coal sent from the Carbondale mines and to what amount? Where is iron ore found and what furnaces have been erected? Describe the course of the North branch of Susquehanna. What river forms part of the eastern boundary? What creeks empty into the Susquehanna?—into the Lackawana?—into the Lehigh? Describe the different lakes. Falling spring. Give a description of Wilkesbarre, its public buildings and other improvements. What is said of its situation and general attractions? Where is Carbondale? Pittston, Kingston, and New Troy? Whitehaven and Stoddartsville? Mention the principal productions, and the amount of coal and lumber annually produced. What canal and rail roads are in this county? What turnpike roads? What is said

of education, academies and schools? What does the history of Wyoming present? Name the Indian tribes who possessed this valley. Who was the first white man that visited it, and for what purpose? What did the Indians determine to do with him and how were they prevented? What gave rise to the contest between the Connecticut people and the Pennsylvanians? In what year did the Connecticut settlers arrive? When did the Pennsylvanians take possession? Relate some of the occurrences which followed? In what year was the settlement attacked by the British and Indians? Relate the circumstances attending the battle and massacre of Wyoming. Mention the sufferings of the survivors in their passage through the wilderness to the settlements on the Delaware. By what means were the Indians compelled to retire? How was the dispute between the Connecticut and Pennsylvania claimants finally settled? Where has a monument been erected, and in commemoration of what event?

35. LYCOMING COUNTY.

Lycoming is bounded north by Tioga and Bradford; east by Luzerne; south by Columbia, Northumberland and Union; and west by Clinton. Population 22,649.

The face of the country is generally uneven and mountainous, though there are many beautiful and fertile valleys, and a considerable portion of the rolling upland is susceptible of cultivation.

White Deer mountain is on the southern line of the county, dividing it from Union; Bald Eagle mountain extends on the south side of the West Branch of Susquehanna, from near Muncy to the western limit of Lycoming, and thence continues through Clinton and Centre. The Muncy hills are on the east of the river, and divide Lycoming from Northumberland and Columbia. Northward is a high range of irregular elevations, deeply intersected by the channels of the principal streams, and known by the name of the North mountain; being the great Allegheny prolonged eastward. Beyond this is a high table land, with the streams running in deep and rocky ravines, and the surface being irregular and uneven. This is mostly a wild unsettled country, covered with almost impenetrable forests and laurel swamps, and offering few attractions except to the adventurous hunter, or the explorers in search of coal and iron ore.

Nippenose valley, in the south-west of the county, presents a number of remarkable and interesting features. It is of a regular oval shape, being about ten miles in length and four in breadth, forming an elliptical basin surrounded by a rim of high and steep mountains. The only access to it, without climbing these mountains, is by a deep gap in the Bald Eagle mountain, opposite Jersey shore. The bed of this valley is composed of limestone, containing fissures and caverns beneath the soil, into which the numerous streams that descend from the mountains sink and disappear. Finding their way, however, under ground, and uniting their waters in those subterranean channels, the whole body gushes forth in one enormous spring, near the gap in the mountain, forming a powerful stream, which passes through the gap and falls into the river above the town of Jersey shore.

The limestone of this valley (II) is the lowest geological formation in the

county, being the same as that of the Cumberland, Kishicoquillas and other valleys in the State. It is surrounded by a margin of the overlying dark slate (III,) which is surmounted by the sandstone (IV) of the Bald Eagle and White Deer mountains. From the end of Bald Eagle mountain, near Muncy, the slates and red shales of the next formation (V) range along the north side of the mountain throughout its whole length, having a north-western dip, and being overlaid by the limestone (VI) which appears along the valley of the West branch, from Muncy to the mouth of Bald Eagle creek, and thence up the valley of that stream. The coarse fossiliferous sandstone (VII,) which belongs next above the limestone last mentioned, is here so thin as to be scarcely perceptible. The olive slate series (VIII,) extends from the Muncy hills around to the north of the limestone belt, and continues along the north side of the valley to Dunnstown, where it crosses the river above Bald Eagle creek. This formation is seen in the range of gently rounded hills which extend along the north side of the valley, beyond the limestone. Still further northward we find the red shales and sandstones (IX) stretching in a wide belt over the hilly region along the base of the Allegheny range; and above it is the compact gray sandstone (X,) capping some of the highest ridges which form the front of that general elevation. Almost in contact with this (the upper red shale and sandstone (XI) being so thin as to be hardly perceived) is the conglomerate and sandstone (XII) which forms the floor of the coal measures; and which, on some of the hills, supports detached portions of the coal series, containing the lower coal seams, with their accompanying strata of iron ore and fire clay. A band of red compact silicious iron ore occurs in the lower part of the red shale and sandstone series (IX,) near its contact with the upper portion of the olive slate formation. This line of ore seems to range across a considerable extent of country, having been mined on Pine creek and Larry's creek, and appearing on Lycoming creek near the mouth of Hogeland's run, whence it probably continues to the eastward. Copper ore has been found near Muncy creek, but not as yet in any great quantity.

The limestone (VI) which appears about Muncy, crosses to the west side of the river and folds round the olive slate of the Muncy hills again to the river above White Deer mountain, forming, together with the accompanying red shale series, (V,) most of White Deer and Black Hole valleys, the red shale extending to the base of the enclosing mountains.

This county is watered by many fine streams. The *West branch* of Susquehanna passes through it in an eastward direction to the town of Muncy, and there turns to the south. *Pine creek* is a large stream, navigable for rafts and arks at high water: it flows south-eastward to the West branch near the western boundary of the county. *Lycoming* and *Loyalsock* are large creeks, rising in the wild forest region in the north of the county, and flowing southward to the West branch. *Muncy creek* is also a considerable stream, running south-westward and emptying into the river near the town of Muncy. *Larry's creek* is in the western part of the county, between Pine and Lycoming creeks.

Williamsport is the county town, beautifully situated on the north side of the West branch, having a population of 1,353. The court-house is an elegant building of brick, having a yard enclosed with a cast iron railing and planted with trees. The county prison is built of stone. There are two large Presbyterian churches, a neat Episcopal church, one Methodist, and one German Reformed church, and a large brick academy. The town contains three commodious and well kept hotels, with a number of handsome

private dwellings. Being situated on the West branch canal, at the termination of the Williamsport and Elmira rail road, it is a place of considerable business.

Muncy is an incorporated borough, with nearly 700 inhabitants, situated in a pleasant valley called "Muncy manor," about a mile from the river and canal, 14 miles below Williamsport.

Jersey-shore, a borough with 525 inhabitants, is on the river and canal, in the western part of the county, 14 miles above Williamsport.

Newbury is a village near the mouth of Lycoming creek, 3 miles above the county town.

Ralston is a new place on the Williamsport and Elmira rail road, about 25 miles from Williamsport, in the neighbourhood of the coal mines.

The agricultural productions are wheat and other kinds of grain, pork, and the various other commodities usually produced by farmers in this part of the State. There are many excellent mills; most of the wheat being manufactured into flour before sending it to market. Whisky was formerly a considerable article of export, and there were 8 or 10 distilleries within a few miles of each other in the lower part of the county; but at present there are only two or three of them in operation. In this, as in other counties of the State, the happy influence and general prevalence of sober and temperate habits has had the effect of stopping most of the manufacturing of intoxicating liquors.

Within the last few years, the soil in some of the poorer districts has been greatly improved by the use of lime as a manure, and large quantities are now annually burned from the limestone for that purpose.

The manufacture of iron is considerable; Astonville furnace, and the Crescent iron works and nail factory are on Lycoming creek, on which stream there is also a forge; a blast furnace on Pine creek; a large iron foundry at Williamsport and another at Muncy. A great quantity of leather is produced from a number of extensive tanneries. There are also several woollen factories and other manufacturing establishments.

Timber is abundant, consisting of oak, pine, spruce-hemlock, cherry, ash, maple and various other kinds. There are in the county 155 saw mills, producing large quantities of lumber, the surplus of which is sent down the river and canal to a market. About half a mile above Williamsport is a noble saw mill, belonging to the "Philadelphia Lumber Company," where an extensive business is carried on.

According to the assessment of 1842, the value of property subject to county taxation was \$4,931,366: county tax \$11,344: State tax \$7,033.

The West branch division of the State canal follows the course of the river through this county, from east to west; passing through the principal towns, and adding greatly to the agricultural and commercial wealth and importance of the whole region. The transportation of produce and merchandise is now so easy,

and business communication with the Atlantic cities so constant and regular, as to render the remote situation of the district a matter of little inconvenience. The rail road from Williamsport to Elmira will, when finished, afford a communication northward with the state of New York. About 30 miles of it are completed and in operation, extending from Williamsport to the coal and iron region on the head waters of Lycoming creek.

There are no turnpike roads in the county, and many of the common roads in the more unsettled parts are rough and unpleasant. There is a bridge across the river at Jersey shore, and others over the large creeks along the main road leading to Williamsport.

The people, in the older settled parts of the county, are generally enterprising and intelligent, and some encouragement is given to the cause of education. There is a classical school in the academy at Williamsport, and common schools are tolerably well sustained in certain districts. The number of school districts is 31, of which 29 have accepted the law, and have 128 schools established, in which the general average period of instruction is about five months in the year.

The prevailing religious denominations are Presbyterians, Methodists, Baptists, Episcopalians and German Reformed. In the neighbourhood of Muncy is a large and respectable society of Friends or Quakers.

Lycoming was chiefly settled by people from the lower counties of Pennsylvania and from New Jersey. Many of the principal families are of German and Irish origin; the German language being still spoken by some of the inhabitants.

In passing through this county the traveller will find much to admire in the boldness and beauty of the scenery. Lofty mountains, gentle hills and fertile valleys are seen in varied succession, the noble river winding among richly cultivated fields and busy towns, or washing the rocky base of mountain precipices; the winding canal, with the lazy boats gliding quietly along its surface, while the sound of the boatman's horn rings loud and clear over valley and river, returning in varied echoes from the mountain glens.

But it is in the solitary and uninhabited region in the north of the county, where nature appears in those wilder features which characterized our deep and dark forest country, before the axe of the settler pierced the dense mantle of woods which covered the surface, and cleared for himself a little spot where the sun might shine upon the soil. Here the primitive forest is seen in all its grandeur; huge trees, the patriarchs of the woods, lift their tall forms above the younger growth around them; while the prostrate trunks of the fallen dead—dead from age and decay, or overthrown by the conquering storm—are scattered thickly among the feet of the living, and there lie, as if to remind them of their own inevitable fate, until, by the slow process of decay, they are reunited to the earth from which they sprang.

There are quiet little lakes there too, sleeping amid the dark woods, whose waters no boat has ever disturbed since the light ca-

noe of the Indian floated gracefully over their surface. One of these, called Lewis' or Hunter's lake, on the head waters of Muncy creek, has an extent of 250 or 300 acres, and is sometimes visited for the purpose of hunting and fishing. Trout are abundant in most of the mountain streams: bears and deer are taken by the hunters in considerable numbers. Wild cats are common; but wolves and panthers are becoming much more rare than formerly.

What are the boundaries of Lycoming? Describe the face of the country. Name the principal mountains, and their situation. Give a description of Nippenose valley. What rock formation does it contain? Describe the range of the other formations. Where is coal found? Iron and copper ores? What river flows through the county? Mention the large creeks, their situation and course. What is said of Williamsport, its situation, public buildings, &c.? What other towns are mentioned, and where situated? What is said of the productions?—of whisky and distilleries? By what means has the soil been recently improved? Mention the iron works and manufactories. Products of the forest. What canal is in this county, and what is said of its importance to the interest of the inhabitants? What rail road? What is said of education, academies and schools? Name the principal religious societies. By whom was the county chiefly settled? What is said of the interesting scenery of this county? Where is Lewis' lake? What species of game abound?

36. MCKEAN COUNTY.

McKean county adjoins the state of New York on the north, Potter county on the east, Elk on the south, and Warren on the west. Inhabitants 2,975.

The surface of the country is rolling and uneven, being somewhat hilly and broken along the streams, but nowhere mountainous. The soil is said to be admirably adapted to grazing, and even in its natural state affords good pasturage for cattle in the woods. Most of the county is covered by a heavy growth of forest timber, the country is sparsely inhabited and the settlements few and far between.

Lumber is the staple production, which is principally floated down the Allegheny river to a market. Large quantities of maple sugar are made by the inhabitants, and salt is manufactured to some extent from salt wells in the county.

The lower strata of the bituminous coal formation extend over a portion of the southern section of this county; but in the north we find rocks whose geological position is below the coal measures, and which, having a gentle inclination towards the south, pass beneath the coal bearing strata in that direction. Iron ore will probably be discovered at a future day, when the country shall have been more minutely explored.

The principal streams are the head waters of the *Allegheny* river, which flows northward into the state of New York, and then turning to the south-west, re-enters Pennsylvania at the north-western corner of this county. In the west is *Kenzus* creek, a branch of the Allegheny: and in the south the sources of the *Clarion* river. In the south-east rises *Sinnemahoning* creek, a tributary to the West branch of Susquehanna.

Smethport is the seat of justice,—a small town containing the usual county buildings. There are some public roads leading from this place in different directions, but in general the facilities for travelling, except on horseback, are by no means extensive.

Even among this scattered population, education is not neglected. Common schools are established according to the system provided by law, and reports from each of the 9 districts have been received by the superintendent, showing that 37 schools are in operation, which are taught on an average nearly six months in the year.

Assessed valuation of property subject to taxation in 1842, \$526,321 : county tax \$5,263 : State tax \$535.

Many of the earlier settlers were from the Eastern states, and some from other parts of Pennsylvania.

How is McKean county bounded? What is the nature of the surface and soil? Mention the staple production, and the principal articles of manufacture. What is the geological character of the county? Describe the principal streams. What is the county town? What is said of education? By whom was the county first settled?

37. MERCER COUNTY.

Mercer has Crawford on the north, Venango on the east, Butler on the south-east, Beaver on the south, and the state of Ohio on the west. The entire population in 1840 was 32,873.

In some portions of the county the surface may almost be called level; but it is generally rolling and uneven, without being much broken. Tracts of alluvial bottom land of remarkable fertility are found in the valleys of the water courses: the upland is generally a clayey loam, producing good crops of grain and grass. In the southern part, where limestone is most abundant, the soil is highly fertile and of enduring quality. Few counties combine more advantages than this: it has a rich soil, a pleasant and healthy climate, pure and wholesome water in sufficient abundance for every purpose, and is favourably situated for trade by means of the State improvements.

The rock strata of Mercer county belong chiefly to the lower series of the bituminous coal formation, having a gentle inclination towards the south-east, in consequence of which a greater variety of successive beds belonging to that formation are found overlying each other in the south-eastern part of the county, and successively cropping out and disappearing towards the north-west. Several beds of excellent coal, from two to six feet in thickness, extend over a large portion of the county, appearing along both sides of the Shenango valley and in various other places favourable for extensive mining operations. The completion of the Erie canal will afford the means of transporting this coal to Lake Erie, the state of New York and to Canada on the north, as well as to the Ohio and Mississippi on the south; so that it is scarcely possible to predict the amount of business which must at no distant day arise from these favourable circumstances.

Iron ore occurs in the neighbourhood of Georgetown; also on the Little Neshannock, and in various other parts of the county. Two blast furnaces

have been erected for smelting the ore ; a number of cupola furnaces for castings, and a large rolling mill and nail factory which is doing an extensive business.

The principal stream is the *Shenango*, which passes through the western part of Mercer from north to south. Its chief branches are the *Pymatuning*, which enters on the north-west from the state of Ohio, and the *Neshannock*, flowing southward from the central part of the county. *Mahoning* river touches the south-western corner, and *Slippery-rock* creek the south-eastern. Numerous smaller streams, of sufficient power for mills and manufacturing purposes, water every part of the county.

Mercer, the seat of justice, occupies a nearly central position, and is beautifully situated on a plain near the Neshannock creek, on the turnpike road from Pittsburg to Erie, 60 miles north of Pittsburg. The town is handsomely laid out, having a public square in the centre, on which stands the court house, a large and substantial brick edifice. There is also a stone prison, an academy, and three churches. Many of the private dwellings and other improvements display considerable taste. Mercer is an incorporated borough and contains about 800 inhabitants.

Newcastle is a flourishing town at the junction of the Shenango and Neshannock creeks, near the southern line of the county, $7\frac{1}{2}$ miles east of the Ohio state line and 18 south-west from Mercer, the county town. It contains four houses of public worship, a female seminary and two public school houses. The Beaver division of the Pennsylvania canal forms a communication from this place to the Ohio river, and the Erie extension will afford a northern outlet to the lakes and the state of New York. It has already become the seat of considerable manufacturing operations, and has a rolling mill and nail factory, two iron foundries, a number of flour, saw, and oil mills, warehouses, stores and other establishments for manufactures and commerce. Population about 800.

West Greenville is a pleasant town on Shenango creek, in the north-western part of the county, 15 miles from Mercer. The Erie extension of the Pennsylvania canal passes through this place, which bids fair at no distant day to become the seat of extensive business operations. It is surrounded by a fine agricultural district, and already contains seven or eight mills and manufacturing establishments, driven by steam and water power.

Sharon is also on Shenango creek and the Erie canal, 16 miles west of the town of Mercer, and near the Ohio state line. It is a place of some business, having mills, warehouses and stores, and contains about 300 inhabitants.

There are many other thriving villages, the principal of which are Clarksville in the north-west, Georgetown in the north, New Bedford and Pulaski in the south-west, Middlesex in the west, North Liberty and Harlansburg in the south-east, and New Wilmington, nine miles south-west from the county town.

The great staple production of agriculture is wheat, of which more than 300,000 bushels are annually produced. Large quantities of corn, oats, buckwheat and potatoes are also cultivated, and

great numbers of live stock, such as horses, cattle and sheep, are raised here and driven to the eastern markets.

The assessed value of property, subject to county taxation in 1842, was \$3,742,867; county tax \$15,323; State tax \$4,228.

Among the public improvements within this county, the most important is the Erie extension of the Pennsylvania canal, which passes along the Shenango valley through the whole length of the county, intersecting a fine agricultural region, abounding with inexhaustible deposits of coal, iron ore, limestone and other valuable mineral productions.

The Pittsburg and Erie turnpike passes through the middle part of the county: common roads are numerous, and though much travelled, are not kept in as good order as those in the older settled parts of the State. Good bridges are built over the principal streams where crossed by the leading roads.

The inhabitants are generally a moral and industrious people, and a commendable degree of attention is paid to the means of promoting popular education, and the increase of general information and intelligence. The common school system is adopted in all the districts, 17 in number, and 214 schools are kept open for instruction during nearly six months in the year. There is an academy in the town of Mercer, and a female seminary at Newcastle in which about 50 young ladies are instructed in the useful branches of female education.

Presbyterians and Methodists are the prevailing religious denominations, but there are numbers of other persuasions.

Mercer county was chiefly settled by emigrants from other parts of Pennsylvania; but the population has been considerably augmented by Irish, English and German settlers.

What are the boundaries of Mercer county? Describe the face of the country, and the nature of the soil. Mention the general advantages possessed by this county. To what series do the rock strata belong? What valuable mineral production is abundant? Where is iron ore found, and what iron works have been erected? What is the principal stream, and its chief branches? Name the other streams. Describe the county town. How is Newcastle situated, and what manufacturing establishments has it? Where is West Greenville? Sharon? What other villages are mentioned and how situated? Mention the principal products of agriculture. What is the most important branch of the public improvements? What is said of the turnpikes, roads and bridges? What is the general character of the inhabitants, and the condition of education? The principal religious societies? By whom has the county been settled?

38. MIFFLIN COUNTY.

Mifflin county has Centre on the north-west; Huntingdon on the west and south; Juniata on the south-east, and Union on the north-east. Population 13,092.

The country is mountainous, having several lofty ridges extending from north-east to south-west, separated by beautiful and fertile valleys. On the east are Shade and Black-log mountains; near the middle is the high and rugged ridge of Jack's mountain;

while the western boundary passes along Stone mountain, and then north-eastward by that complicated series of elevations known by the name of the Seven mountains, part of which are in Mifflin, and part in Centre.

The geological features of this county show abundant evidence of the disturbance which has affected the whole of our Appalachian region. The action of those mighty forces has produced alternate lines of elevation and depression, by which the rock strata are tilted in opposite directions, and successive formations exposed. The high mountain ranges already mentioned contain the hard sandstone (IV), which is the usual rock in most of the mountains in the middle part of the State. The valley between Shade and Jack's mountain is a basin or synclinal depression, in which the rocks dip in a direction towards the centre from both sides. We accordingly find the series of variegated and red shales (V) overlying the mountain sandstones on both sides of the valley, and near the middle of it the limestone (VI) and the fossiliferous sandstone (VII,) forming a series of hills nearly midway between the two mountains. This limestone is seen on the Juniata at Lewistown. From Waynesburg (now called McVeytown) south-westward, the olive slate formation (VIII) extends to the Juniata at and above Newton Hamilton. In Kishicoquillas valley, on the contrary, an axis of elevation has brought up the lower limestone (II) to the surface, having around it a border of the overlying dark slate (III) near the base of the surrounding mountains. Iron ore is dug at various places in this valley, of the kind usually accompanying the same limestone in other parts of the State; being the brown hydrated peroxide, occurring in cellular or compact masses, hematitic, or of the stalactite structure commonly called pipe ore. The fossiliferous band of ore contained in the slates and shales (V) above the mountain sandstone, is found in several places within the county, of sufficient thickness to be productive. It is mined on the south-east flank of Jack's mountain, and at some other points.

The *Juniata* river is in the southern part of the county; its course for about five miles after passing Jack's mountain being south-eastward, when it turns suddenly north and then to the west, and after a course of several miles approaches within a few hundred yards of its channel above the bend. It then turns north-eastward, and pursues that general course into Juniata county. *Kishicoquillas* creek flows out of the valley of that name, through a gap in Jack's mountain, and falls into the Juniata at Lewistown. A little below is the mouth of *Jack's* creek.

Lewistown, the seat of justice, is a flourishing place containing upwards of 2000 inhabitants. Its favourable location on the Juniata river, the state canal, and the great northern turnpike, at a point which forms the outlet from the rich and productive valleys on the northward, has rendered it a place of very considerable business. The public buildings are a handsome new court house, a stone prison, a bank, an academy, a neat Episcopalian church, a large Methodist meeting house, and places of worship for a Lutheran and a Catholic congregation.

McVeytown, formerly called Waynesburg, on the Juniata, 11 miles above Lewistown, is an incorporated borough with a population of 350. *Newton Hamilton* is a small town in the south-western part of the county. *Belleville* and *Allenville* are flourishing villages in Kishicoquillas valley.

The soil of the valleys is generally productive; but that of Kish-

coquillas is eminently so, being one of the most fertile, beautiful and well cultivated tracts in Pennsylvania. It is about 30 miles in length and from three to four in breadth; inhabited chiefly by Germans of a peculiar religious society called *Amisch*, a peaceable, moral and industrious people, who appear to follow the Scripture injunction, "study to be quiet and mind thine own business."

Excellent crops of wheat, corn and the other kinds of grain usually cultivated, are grown in these valleys; great numbers of cattle and hogs are raised by the farmers, and flour, pork and other agricultural products to a large amount are annually sent on the canal to the eastern markets. There are 3 blast furnaces, 2 forges and 2 foundries for the manufacture of iron, for which purpose the mountain forests furnish charcoal in abundance. There are also several woollen factories, and other manufacturing establishments.

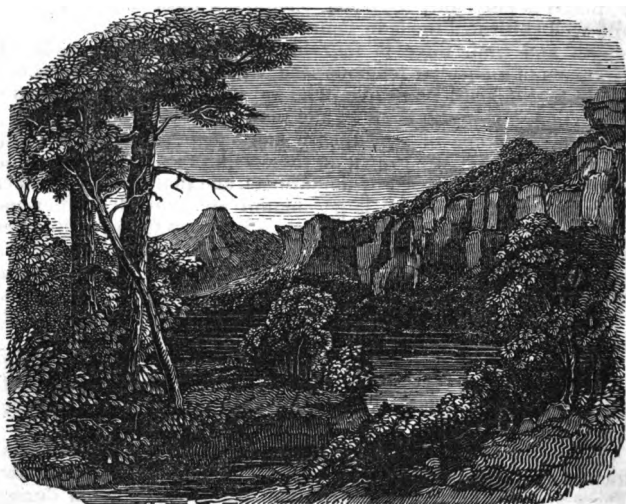
The assessed value of property taxed by the county in 1842, was \$4,513,297: county tax \$6,506.

The Juniata division of the Pennsylvania canal, and the northern turnpike from Harrisburg to Pittsburg, both pass through Mifflin county. There is also a turnpike from Lewistown to Bellefonte, which continues thence to Erie.

Education on the common school system is general; all the districts, ten in number, having accepted the provisions of the law. There are 63 schools established, and instruction is given during an average of 6½ months in the year. Societies for the promotion of moral and benevolent objects have been instituted, and the character of the inhabitants is generally moral and intelligent.

The most numerous religious denominations are Presbyterians, Methodists, Lutherans, and German Reformed; there are also some Baptists and Episcopalians. The inhabitants are mostly descendants from Irish and German families; many of the latter continue to speak their own language.

Much of the scenery along the banks of the Juniata, in this county, is of the same wild and picturesque character which gives such varied and romantic beauty to the shores of that river, throughout most of the distance from its source in the dark and solitary glens of the Allegheny mountain, to its junction with the placid waters of the Susquehanna. High mountain ridges rise abruptly from the river, with towering cliffs, whose gray and naked summits have braved the storms of a thousand winters, still standing in their sublime and quiet grandeur, as unchanged by the shock of the tempest as by the sighing of the summer breeze; and there they will stand for ever, bidding defiance to the elements and to time, until, at the word of Him by whom they were created, "the everlasting mountains shall be scattered, and the perpetual hills shall bow." In this wild and romantic region, the charms of our native scenery are displayed in all the beauty of their original rude and primitive character. The tree-clad mountain, the towering precipice, the beautiful river pursuing its quiet course between the hills,—the desert loneliness and the savage grandeur which reign around, afford to the lover of nature many a scene for delightful contemplation,—many a quiet secluded spot where he may rest in undis-



Juniata river.

turbed meditation, and, far removed from the works of man, derive lessons of wisdom and good from those of the Creator so magnificently displayed around him.

How is Mifflin bounded? Describe the face of the country, and the principal mountains. What is said of its geological features? Mention the range of some of the principal rock formations? What two varieties of iron ore occur, and where found? Describe the course of the Juniata river. What creeks are mentioned? Describe the county town and the advantages of its position? Where is McVeytown, and what was it formerly called? Mention some of the other towns, and their situation. What is said of the soil of the valleys? Give a description of Kishicoquillas valley, and its inhabitants. What are the productions of this county? Iron works and manufactories? Canal, and turnpikes? What is said of education, societies for moral and benevolent purposes, &c.? Principal religious denominations? From whom are the inhabitants chiefly descended? Describe the scenery along the Juniata river.

39. MONROE COUNTY.

Monroe county was erected in 1836 from parts of Northampton and Pike. It is bounded on the north by Wayne and Pike; on the east by the river Delaware; on the south by the Blue mountain, which separates it from Northampton, and on the west by Carbon and Luzerne. Population 9,879.

The face of the country is irregular, being diversified by mountains, hills and valleys. The Kittatiny or Blue mountain on the south, and Pokono in the west, are the principal mountains;

Chesnut hill, Prospect hill, and other elevated ridges are situated between these mountains.

The geological character of the county may be understood from the following brief sketch. Along the northern side of the Blue mountain is a narrow belt of red and variegated shale (V,) succeeded on the north by a limestone (VI) of no great thickness. Then follows the coarse fossiliferous sandstone (VII) forming a sharp, rocky ridge nearly parallel with the mountain. On the northern side of this we come upon the olive slate formation (VIII,) the lower beds of which are in some places so calcareous as to form a rough, slaty limestone, containing masses of chert or flint, and also shells and other fossil remains. Approaching towards the foot of Pokono mountain, we encounter the red sandstones and shales (IX) next in position above the olive slate; these form the southern front of the mountain, and extend through the country immediately south-east of it. Passing over Pokono, we meet, in the rocky elevated region beyond its summit, the hard coarse sandstone (X) which belongs to the next formation.

The soil of the valleys in the south and east, where limestone and calcareous slate occur, is good, and some fine farms show that agriculture may be successfully pursued in this region. Further northward, towards the Pokono mountain, the soil is less productive; but is cultivated and improved to some extent. North of Pokono is a high rolling table land, rocky, and having in many places a wet swampy soil. This region is mostly covered with timber, very thinly inhabited, and only valuable for the pine and other lumber produced from it.

Monroe county is well watered: the *Delaware* river flows along its eastern side, and the *Lehigh* forms part of its western boundary, separating it from Luzerne. There are also many large creeks which flow towards these rivers. *Brodhead's* creek runs southward from Pike county, and near Stroudsburg receives the waters of *Pokono* and *McMickle's* creeks from the westward, after which it empties into the Delaware two miles above the Water gap of the Blue mountain. Further eastward is *Marshall's* creek, which unites with Brodhead's creek near the Delaware. The *Bushkill* is a large stream which partly forms the boundary line between Monroe and Pike. In the south-west are the branches of *Aquan-chicola* and *Big* creeks, which run towards the Lehigh; and in the north-west the *Tobyhanna*, a large stream, issues by several branches from the ponds and swamps in the wilderness beyond Pokono mountain, runs westward and falls into the Lehigh below Stoddartsville; being, at their junction, nearly as large as the Lehigh. The streams generally descend rapidly from the more elevated parts of the country, and afford an incalculable amount of water power for useful purposes; some of which is employed by saw mills, flour mills, &c., but by far the greater part is yet unimproved.

Stroudsburg is the seat of justice, situated in a pleasant valley in the south-eastern part of the county, about four miles from the Delaware. The court house, prison, and other public buildings have been constructed more with a view to economy than to architectural ornament or effect. The borough contains 407 inhabitants, and though not a place of very active or extensive business,

is gradually increasing. There are some good flour mills in the neighbourhood, and a forge on Brodhead's creek, below the town.

Dutotsburg is a small village on the Delaware, a mile above the Water gap, established many years ago, but has never been a flourishing place.

In addition to the agricultural productions of this county, lumber from the extensive forests in its northern and western parts forms a valuable and important article of manufacture and trade. White pine timber is yet abundant on the waters of the Lehigh, and since the improvement of the navigation from Mauch Chunk to Stoddartsville has been completed, settlements have been made and many excellent saw mills built in this hitherto almost inaccessible region. A large territory, but a few years since so solitary and unfrequented as to be called "the shades of death," has now become a scene of lively industry, valuable and important for its forest productions. Besides the pine, there is abundance of hemlock, double spruce, oak, chestnut, wild cherry, and other valuable timber. The sportsman finds this an attractive region; deer and bears are common, and trout may be caught in most of the streams.

The turnpike road from Philadelphia to Wilkesbarre passes through this county, entering it at the Wind gap of the Blue mountain and leading north-westward across the Pokono mountain to Stoddartsville, on the Lehigh, where it enters Luzerne. Owing to the nature of the country, and its being in many parts but thinly settled, many of the common roads are rough and neglected. Some, however, have been improved by funds appropriated by the commonwealth, and are in tolerable condition.

According to the assessed returns of property subject to county taxation for 1842, the valuation is \$1,945,510; State tax \$2,084.

The state of education is improving, and the common school system is generally adopted. There are 11 school districts, and 75 schools are reported as being in operation under the law, which are kept open on an average about 4 months in the year. There is an academy, and also a female seminary at Stroudsburg, both tolerably supported.

Monroe county has a population of a mixed description:—in the southern and western parts are many Germans who yet speak their own language.

The religious denominations are various. Presbyterians, Lutherans, Methodists and Baptists are the most numerous: at Stroudsburg are some Friends who have a meeting house at that place.

When, and from what counties was Monroe erected, and how is it bounded? What is the nature of the surface? Name the principal mountains and hills. Give a brief sketch of the geological features of the country. What is said of the several varieties of soil? What are the rivers? Mention the principal creeks and their general course. What is said of the amount of water power? Describe the county town. Where is Dutotsburg? What are the principal productions? What is said of the forests on the waters of the Lehigh, and their products? What turnpike road crosses the county? Give some account of the condition of education and

of the schools and academies. What is said of the population, and of the religious societies?

40. MONTGOMERY COUNTY.

Montgomery county has Bucks on the north-east, Philadelphia on the south-east, Delaware and Chester on the south-west, and Berks on the north-west. Population 47,241.

The surface is pleasantly diversified by hills and valleys; in the north are some rough and rocky eminences, but no part of the county can be termed mountainous.

The soil is generally productive and well cultivated: a considerable portion is naturally fertile, and much of that which is of poorer quality has been so much improved by manuring and careful tillage as abundantly to repay the farmer for his labour. Some elevated ridges in the middle part of the county have a rather wet and cold soil; but may be made to yield tolerable crops of grass and grain.

In the south-east the rocks are chiefly of the primary class, gneiss and mica state predominating, with occasional veins of coarse granite and hornblende. In Lower Merion township is a belt of serpentine, which also appears on the east side of the Schuylkill, with an accompanying steatite or soap stone rock, which has been extensively quarried on both sides of the river. It also contains talc, dolomite and other minerals. A rather peculiar bed of rocks, consisting chiefly of feldspar and quartz closely and intimately combined, containing also small scales of talc, and occurring in rather thin and flat layers, enters the county near the south-east corner and passes westward in Edge hill, south of Willow grove; dividing west of the turnpike into two portions, one of which extends south of the limestone into Barren hill near the Schuylkill, and the other westward along Sandy run until it is lost beneath the overlying red sandstone.

The limestone formation of the great valley, in Chester county, extends eastward into Montgomery; occupying a considerable portion of Upper Merion township, and crossing the Schuylkill between Spring mill and Norristown. From the Schuylkill it ranges eastward through Plymouth and Whitemarsh to Sandy run, and terminates in Abington township west of Willow grove. Beds of talc slate and other rocks are found in some places alternating with the limestone, and veins of quartz are not uncommon. The limestone itself is by no means uniform in its quality; some of its beds yielding lime of much greater purity than others. In general, however, the lime burned from it is highly esteemed, and immense quantities are produced for the supply of Philadelphia and the adjacent country. In Upper Merion township, in the vicinity of the Schuylkill, there are numerous and extensive quarries where kilns have been erected for burning the stone upon the spot; the canal and rail road affording great facilities for transporting the lime to market, as well as for bringing coal to the kilns for fuel. An immense amount of stone is also conveyed to other places to be burned. There are likewise extensive quarries on the east side of the river below Norristown. A very large quantity of lime is also burned in Plymouth and Whitemarsh, which is taken by wagons to the city, and for many miles into the adjacent country on the north and eastward, where it is in great demand for building and agricultural purposes.

Several large marble quarries are worked near the turnpike, about 13 miles from Philadelphia, affording varieties of white, dark blue, and clouded marble, which has been extensively used in the city for architectural and ornamental purposes. Iron ore occasionally occurs in the neighbourhood

of the marble quarries, and also near Spring mill and Conebehooken on the Schuylkill, where it has been dug to some extent.

On the north of the limited area in the southern part, occupied by the primary rocks and limestone already described, the middle secondary red shale and sandstone formation extends over most of the remainder of the county. The southern border of this formation overlies the primary rocks near the south-eastern corner of Montgomery, and extends westward to the Schuylkill about a mile below Norristown, where it crosses into Upper Merion and passes thence into Chester county. In the northern part of Montgomery this formation is interspersed with ridges and dikes of trap rock, which, in the vicinity of Sumanytown and in other places, form rough and rocky hills. In the neighbourhood of these eruptions of trap, the red shale has been mostly changed to a hard blue or purplish rock, often very compact, and ringing under the blow of a hammer like cast iron. Klingberg, or Ringing hill has received its name from containing rocks of this character. Some of the ridges in the middle part of the county, remote from any visible locality of trap rock, contain the blue altered strata of shales and sandstones; the change in their character having probably been effected by the agency of trappean matter beneath, which has never reached the surface, but the heat of which has been sufficient to change the texture and colour of the superincumbent red shale strata, and convert them into the compact, hard, blue rocks which so frequently appear within the limits of this formation. The soil derived from these altered rocks is usually of a rather cold, wet, and heavy nature, and is much less esteemed for cultivation than that of the red shale and sandstone.

On Perkiomen creek, near the Schuylkill, mines have been sunk to considerable depth, from which the ores of lead, copper and zinc were formerly obtained; but mining operations have been for some years discontinued at this place.

The principal stream is the river *Schuylkill*, which forms the south-western boundary of Montgomery to the mouth of Valley creek, below which, on the west side of the river, are the townships of Upper and Lower Merion, belonging to this county. *Perkiomen* is a large creek flowing southward from the northern part of the county, and falling into the Schuylkill about six miles above Norristown. *Wissahiccon* and *Pennypack* creeks both rise in the south-east of Montgomery, and run southward into Philadelphia county; the former emptying into the Schuylkill and the latter into the Delaware: *Skipack* and *Swamp* creeks are branches of the *Perkiomen*. *Manatawny* creek enters in the north-west from Berks county, and falls into the Schuylkill at Pottsgrove.

Norristown, the seat of justice, is a neat and well built town, on the east side of Schuylkill, 16 miles above Philadelphia, containing a population of about 3,000. Its public buildings are a handsome court-house, a county prison, an academy, a bank, and several churches. Since the construction of the works belonging to the Schuylkill Navigation Company, and the Philadelphia and Norristown rail road, this place has rapidly improved, and has now become of some importance as a manufacturing town. A number of cotton factories have been erected, as well as establishments for dyeing and printing cotton goods, nail works, and various other manufactories of different kinds. Having a direct communication with Philadelphia by rail road, and being located in a healthy and pleasant situation, it is a place of considerable resort from the city. Several newspapers are published here; and

societies have been instituted for various moral, literary and charitable objects.

Trappe is a thriving village on the Reading turnpike, nine miles above Norristown.

Pottstown, or Pottsgrove, is a pleasant and flourishing borough, containing upwards of 700 inhabitants, situated near the Schuylkill in the north-west of the county. Both the rail road and turnpike from Philadelphia to Reading pass through the town.

Summertown is in the north, inhabited mostly by Germans.

Jenkintown, *Abington*, *Willow-grove* and *Hatboro* are pleasant villages in the south-east, all situated on the old York road. There are also numerous other villages scattered throughout the county.

A considerable portion of Montgomery is in a high state of cultivation, and its agricultural productions are numerous and important. Most kinds of grain cultivated in the state are grown here, and hay, potatoes, butter, fruit and other articles for the Philadelphia market are produced in abundance. The products of the dairy alone are estimated to amount to \$402,681 annually. Lime, limestone, and marble also constitute a considerable item in the wealth of this county, producing an annual income of more than \$250,000.

The manufacturing operations are numerous and extensive. There are four furnaces and five forges and rolling mills for the manufacture of iron. At Conshehocken, on the Schuylkill, 12 miles from Philadelphia, are works for rolling sheet iron, where that article is produced in a style of excellence unequalled in this country, and nearly resembling the famous Russia sheet-iron. There are 11 cotton and 8 woollen factories, 12 powder mills, 9 paper mills, about 130 flour and grist mills, 30 oil mills, several mills for sawing marble, and numerous other works for the production of various articles of manufacturing enterprise.

Several important public improvements pass through Montgomery. The Philadelphia and Columbia rail road crosses the southwestern corner; the Philadelphia and Reading rail road, and the Schuylkill navigation, extend along the Schuylkill through the whole length of the county; and the Philadelphia and Norristown rail road forms a communication between the county town and the commercial capital of the State.

There are many excellent turnpike roads: those leading from Philadelphia to Lancaster, Reading, Bethlehem, and Doylestown all cross different parts of the county, and others are connected with them in various places. For the number and excellence of its bridges, Montgomery surpasses most counties in the State. In addition to several across the Schuylkill at different points, there are on most of the leading roads expensive and substantial stone bridges; one of which, over the Perkiomen, is of great length, built of solid masonry at a cost of \$60,000.

In some of the townships considerable attention is paid to education, and schools are well supported; but in other districts this important subject is much neglected. There are academies in Norristown, Pottstown, Lower Merion, and one at Hatboro called

Lollar academy, after its founder, Judge Lollar. Of the 32 school districts only 13 have accepted the common school system as established by law, and have 63 schools in operation under its provisions, which are kept open for instruction upwards of 8 months in the year, on a general average.

Of the various religious denominations, the most numerous are Presbyterians, German Reformed, Lutherans, Methodists, Baptists and Friends.

The early settlers were mostly Welsh and Germans, who established themselves here soon after the founding of the colony by William Penn, and whose descendants still constitute a great majority of the population. The Welsh language has become nearly or quite extinct; but German is still generally spoken in the northern townships.

By what counties is Montgomery bounded? What is the character of the surface? What is said of the soil? Describe the geological features of the south-eastern part. What is the extent of the limestone formation, and where is it extensively quarried? Where are marble and iron ore found? What formation extends over most of the county north of the limestone? Where have lead, copper and zinc been obtained? What river is in this county? Describe the course of Perkiomen creek. Wissahiccon and Pennypack. What other creeks are named? How is Norristown situated and what is said of it? Trappe? Pottstown? Summerville? What other villages and where? What are the chief products of agriculture? Value of lime, limestone and marble? Mention the iron works. Other manufactories. What public improvements in the county? Turnpike roads? Bridges? What is said of education? Academies? Common schools? Religious societies? By whom was the county first settled and when? What language besides English is still spoken?

41. NORTHAMPTON COUNTY.

Northampton is bounded north by Carbon and Monroe; east by the river Delaware, separating it from New Jersey; south by Bucks; and west by Lehigh county. The population according to the census of 1840 was 40,996; but a part having been since laid off as Carbon county, leaves the present population of Northampton about 34,000.

The southern portion is mountainous and uneven, being traversed by the irregular chain of hills called the South mountain. These are chiefly composed of gneiss and other primary rocks, which are overlaid by limestone in some of the narrow valleys. Magnetic iron ore is found in several places on the hills, associated with the primary rocks. North of these hills is a broad belt of the great limestone formation (II) of the Cumberland or Kittatinny valley, which stretches from the Delaware south-westward into Maryland and Virginia, having a soil of the most fertile and productive character, and a comparatively level surface. Iron ore of the brown argillaceous and hematite variety is abundant along the south side of the Lehigh, near the junction of this limestone with the primary rocks, and is mined in many places. It is also occasionally found within the range of the limestone further north. On the Delaware, above Easton, the limestone belt is divided by a high ridge of primary rocks called Chesnut hill, having along its southern side, serpentine and other magnesian rocks; associated with which are found talc, asbestos, tremolite, augite, nephrite, zircon, tour-

malin, and a variety of other interesting minerals. There are few places in the State which offer so inviting a locality to the mineralogist as the neighbourhood of Easton. On the south side of Manokesy creek, about three miles north of Bethlehem, is a small insulated ridge of primary rocks, protruded through the limestone, and nearly in a line with the range of Chestnut hill. Between Allentown and Bethlehem, along the north side of the Lehigh, is a hill in which these rocks also appear, having on its northern side some detached portions of sandstone (l) between the primary rocks and the limestone.

The northern border of the limestone formation extends eastward from the Lehigh at Siegfried's bridge, by Bath and Nazareth, to the Delaware at the mouth of Martin's creek, appearing also on the north side of the river to a point nearly opposite Belvidere. From this line, to the base of the Blue mountain, the country is composed of a slate formation (III) with the exception of a narrow point of limestone on the Delaware about the mouth of Cobus creek, below the Water gap, which, after extending a short distance westward, sinks beneath the overlying slate. The surface of this slate region is generally hilly, and the soil but moderately productive; being, however, susceptible of great improvement by the use of lime as a manure, when aided by judicious cultivation. Extensive slate quarries have been opened near the Delaware, where roofing slate of superior quality is obtained in large quantities, and a manufactory of school slates has been established in which, by the aid of ingenious machinery, slates of peculiar neatness and excellence are produced at a moderate price. There are also large slate quarries near Nazareth, and some at other places. Some of the lower strata of the slate formation, near its junction with the limestone, yield an excellent hydraulic cement, which is manufactured near Siegfried's bridge, on the Lehigh, by the Lehigh Navigation Company. These strata are finely exposed on the east side of Martin's creek, near its mouth.

The Blue mountain now forms the northern boundary of Northampton, and is capped by the compact gray and reddish sandstones (IV) of the formation next above the slate last mentioned. The Delaware and Lehigh rivers both pass through this mountain by gaps apparently torn by the mighty force of the rushing waters from the country above; with high and precipitous cliffs rising almost perpendicularly from the water, and presenting magnificent views of wild and romantic scenery on the rivers, as well as a widely extended and beautiful prospect from the top of the mountain. Nearly mid-way between these two rivers is a singular opening through the mountain, called the Wind gap, through which no stream passes; but the almost level crest line of the mountain is here depressed nearly as low as the country on each side; forming a notch in the mountain, of peculiar convenience for the passage of travellers and teams, and towards which the leading roads on both sides converge and pass through in one great thoroughfare.

The *Delaware* river flows along the eastern side of the county, in a direction nearly south, but with a meandering course. The *Lehigh* runs south-eastward along the western boundary to within about five miles of Allentown, where it passes into Lehigh county, one township of which lies east of the river. At Bethlehem it again enters Northampton, having now a north-eastern course to the Delaware at Easton. *Bushkill* creek is a considerable stream, rising by several branches near the Blue mountain, and flowing southward to the Delaware at Easton; its mouth being but a short distance above that of the Lehigh. This stream supplies power to a great number of mills throughout most of its course. *Martin's* creek runs southward to the Delaware 7 miles above Easton. *Manokesy* has also a southern course, falling into the Lehigh at Beth-

lehem. *Saucon* creek flows north-eastward from the southern part of Lehigh county, and empties on the south side of the Lehigh below Bethlehem. All these streams, together with a number of smaller creeks in different parts of the county, supply abundance of water power for mills and manufacturing purposes. In addition to this is the surplus water from the dams and canal of the Lehigh company, which is let to individuals for uses requiring water power.

Easton, the county town, is beautifully situated at the confluence of the two rivers, surrounded by picturesque hills, having on the east the majestic Delaware, on the south the wild and rapid Lehigh, and on the north the romantic little Bushkill, winding its way through green meadows, and having its banks studded with busy mills and substantial farm houses. This town is favourably located for business, being in the midst of a fertile, well cultivated and populous region, and at the junction of the Delaware division of the State canal with the works of the Lehigh Navigation Company. It has also a communication with New York, by means of the Morris canal, on the opposite side of the Delaware. The town is rapidly increasing in wealth, population and commercial importance; containing by the census of 1840, nearly 5,000 inhabitants. The court house, an ancient building, stands in a public square in the centre of the town; the other public buildings are the county offices and prison, two banks, an academy, and a number of churches, some of which are spacious and handsome edifices. La Fayette college is a noble building situated on the hill north of Bushkill creek, and commanding a fine view of the town, the rivers, the canals, and the picturesque and flourishing country around, for miles in extent.

The town is supplied with excellent water, which is conveyed in pipes from a large spring on the south side of Chestnut hill, about a mile distant. The air is pure and salubrious, and the place is remarkable for the general good health enjoyed by its inhabitants. An extensive trade in country produce, coal, lumber, and merchandise is carried on, and various branches of manufactures are successfully pursued. There are bridges connecting the town with the opposite sides of the Delaware, the Lehigh, and the Bushkill.

On the opposite side of the Lehigh is South Easton with about 700 inhabitants, the seat of extensive manufacturing operations, which are carried on by means of water power from the Lehigh canal. There is a cotton factory, a furnace and other iron works, a wire factory, a foundry, a rifle factory, several flour and saw mills, and various other establishments for the employment of productive industry.

Bethlehem, on the Lehigh eleven miles above Easton, was founded at an early day by the Moravians or United Brethren, and the town is still chiefly inhabited by their descendants. They have a large church, a female seminary, a school for boys, a widows' house for the support of indigent widows, and a sisters' house for the support of indigent unmarried females. All these institutions are admirably conducted, and a degree of neatness and order is

every where observable which is highly creditable to the society. The schools enjoy a high and deserved reputation, and have a great number of pupils from the city and various parts of the country. The delightful situation of this place, the charming country around it, and above all, the quiet and order observed by the inhabitants, with their politeness and general attention to the convenience and comfort of strangers, have rendered Bethlehem a favourite place of resort during the summer months. The day may be pleasantly passed in riding through the beautiful country around, in walks among the hills, in boating or fishing on the river; while the evenings are enlivened by concerts and other musical entertainments, the inhabitants being distinguished for the attention paid to music and the excellence of their performances in this art.

Nazareth is a pleasant town, 10 miles north of Bethlehem, also inhabited chiefly by Moravians, who have here a spacious church, with other buildings belonging to the society, and a very flourishing institution for the education of youth. *Bath* is 4 miles west of Nazareth; *Kreidersville*, *Kernsville*, *Cherryville*, and other villages are in the western part of the county. *Richmond*, *Centreville*, and *Williamsburg* are in the north-east, on the road from Easton to the Water gap; *Hellerstown* is south of the Lehigh, near the southern corner of the county.

Wheat is the staple product of agriculture, which is chiefly manufactured into flour, before sending it to market, the quantity being estimated to amount to upwards of 135,000 barrels annually. Indian corn, rye, oats, and buckwheat are also extensively produced. Cattle, hogs, and sheep are raised and fattened for market by the farmers; wool is produced in considerable quantity and is mostly manufactured into goods for domestic wear. Most of the surplus productions are sent to Philadelphia by the Delaware canal; some to New York by the Morris canal, and some into the coal region for the supply of the mining population.

The value of real and personal property subject to county taxation, according to the assessment for 1842, including that portion of the county now belonging to Carbon, was \$13,086,243: State tax \$17,235.

The public improvements of most importance to this county are the Delaware division of the State canal, and the canal and slack-water navigation of the Lehigh company. The Delaware division extends from tide-water at Bristol to Easton, about eight miles of the canal being in Northampton: at Easton it connects with the Lehigh navigation which extends up that river to the north-western corner of the county. The benefits received by the people of this region from the construction of these works will be perceived when it is considered that before they were undertaken the Lehigh was useless for the purposes of navigation; produce being sent from Easton in long narrow boats which descended the Delaware at high water by a hazardous voyage through the falls, and were pushed back against the current by the incessant and fatiguing operation of "setting" or propelling the boat by means of long poles pointed with iron. Transportation to and from the city is

now easy and regular, except at seasons when the canal is closed by ice.

The roads are generally kept in good condition for travelling, and bridges are built over most of the streams where they are crossed by the main roads. There are bridges across the Lehigh at Easton, Freemansburg, and Bethlehem, besides some in the western part of the county.

Including that portion now allotted to Carbon county, Northampton contained 22 school districts, in 18 of which the law regulating the system of education by common schools has been adopted. According to reports received from 16 of the accepting districts they have 140 schools established, in which the average time of teaching is nearly 6½ months in the year. La Fayette college at Easton is a flourishing institution, and the seminaries for both sexes, established under the care of the Moravian society at Bethlehem and Nazareth, are well conducted and extensively patronized.

The inhabitants are mostly of German descent, and in their familiar intercourse with each other generally use their own language, though there are few who do not understand and speak English sufficiently well for the common purposes of conversation.

How is Northampton bounded? What chain of hills is in the southern part, and what is the character of their rocks? What variety of iron ore is found here? Where is the limestone formation and what kind of ore is associated with it? What minerals are found in the rocks of Chestnut hill? Mention the other ridges of primary rocks. Describe the extent of the slate formation. What is said of its surface and soil? Mention the slate quarries and the operations at them. Where is hydraulic cement obtained? What is said of the Delaware and Lehigh gaps in the Blue mountain? Describe the Wind gap. What are the principal rivers and their course? Where does Bushkill creek rise and what is its direction? Mention the other streams. What is said of the amount of water power? Describe the situation of Easton. Its advantages for business. Public buildings. How is the town supplied with water? What is said of its health, trade, &c.? Give some account of South Easton. Where is Bethlehem, and by whom founded? Mention the institutions belonging to the society, and the character of the schools. What is said of the general attractions of this place? What can you say of Nazareth? Name the villages in the west:—in the north-east:—in the south. Mention the staple product, and the amount of flour annually manufactured. What are the other productions of agricultural industry? Where does the surplus produce find a market? What canals are partly in this county, and what benefits are derived from them? What is said of roads and bridges? Common schools: La Fayette college: seminaries at Bethlehem and Nazareth? What is said of the inhabitants, and of their language?

42. NORTHUMBERLAND COUNTY.

Northumberland county has a very irregular shape, and is bounded on the north by Lycoming; north-east and east by Columbia; south-east by Schuylkill; south by Dauphin, and west by the Susquehanna river and West branch, which separate it from Union. Population 20,027.

The southern part is mountainous, the middle hilly, and the northern, along the West branch of Susquehanna, more level. In the south are the Line, Mahanoy and Little mountains, in the middle the Shamokin hills, and between the two branches of Susquehanna is Montour's ridge, partly in this county and partly in Columbia. The Muncy hills form the northern boundary.

South of the olive slate (VIII) of the Muncy hills, the country to the northern base of Montour's ridge is occupied by limestone (VI) and red and various coloured slates and shales (V,) having a rich soil and being the most productive agricultural part of the county. In Montour's ridge is a hard gray and reddish sandstone (IV,) overlaid by greenish and red slates and shales (V) with their thin strata of limestone and the valuable band of fossiliferous iron ore. This formation is found on both sides of the ridge, and sometimes saddles over its top. Overlying the red shale is a belt of limestone extending also on both sides of the ridge; that on the south side appearing near the West branch about 4 miles above the town of Northumberland, and extending towards the North branch below Danville. South of this are hills containing the olive slates and gray sandstones (VIII) which extend over the country from above Northumberland southward and south-eastward to the range called the Shamokin hills, and also in and beyond the valley of Shamokin creek. These rocks are overlaid by a narrow belt of the red shales and sandstones (IX) of the next superior formation, extending over the high grounds from the Blue hill at Northumberland eastward to Roaring creek. Another range of this red shale and sandstone is also seen extending from the Susquehanna along the north side of the Little mountain to the valley of Roaring creek. The lower beds of the olive slate series (VIII) are finely exposed in the cliffs along the east side of the river below Sunbury, where some of the strata are sufficiently calcareous to be used for burning into lime. In the interstices of this limestone is found an ore containing sulphuret of lead and silicate of zinc; but it is doubtful whether either its quantity or quality is sufficient to render it an object of much consequence. Other layers of this formation appear to be adapted to the manufacture of hydraulic cement, and may be seen abundantly along the shore of the river nearly opposite Selinsgrove.

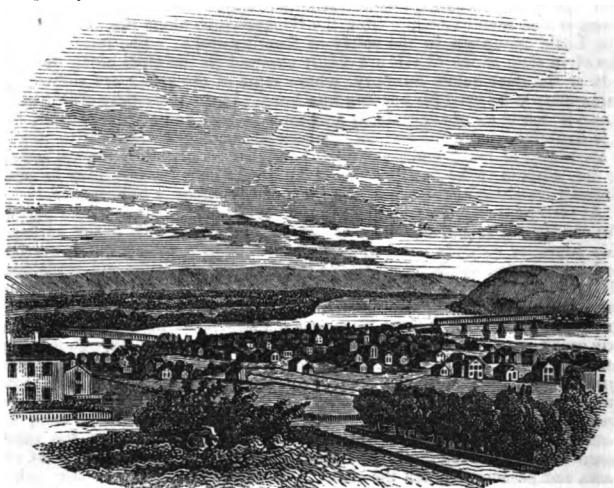
At Georgetown, (Dalmatia,) on the Susquehanna, in the southern part of the county, an axis of elevation brings up a limestone (VI) to the surface; this however extends but a short distance east of the river, being overlaid and surmounted by the olive slate (VIII) and the red shales and sandstones (IX) which occupy the region between the Line mountain on the north and the Mahontongo on the south. In the Line and Little mountains, which unite in a bold knob on the Susquehanna above the mouth of the Mahanoy creek, we have a hard compact sandstone (X,) which, though it sometimes contains thin layers of black carbonaceous matter, is yet several hundred feet below the true coal measures. Enclosed by these mountains, and extending along the valley of Mahanoy creek between the Line and Mahanoy mountains, and along Little Mahanoy creek between the Little and Big mountains, is the red shale (XI) which overlies the sandstone last mentioned; all these rocks dipping towards the middle of the basin and passing beneath the coal. The coarse conglomerate next below the coal series appears in the Mahanoy and Big mountains, which unite on the west between the Great and Little Mahanoy creeks, enclosing the western point of the Shamokin and Mahanoy coal field.

Mining operations in this region are principally confined to the vicinity of the new town of Shamokin, at the eastern termination of the rail road from Sunbury, which affords a ready means of transporting the coal to the river. Here, in the gap by which Shamokin creek passes through the Big mountain, 5 or 6 beds of coal, from 3 to 9 feet thick, have been opened on both sides of the creek; and further up the stream, in the smaller hills along its banks, are numerous other beds, a number of which are produc-

tively worked. On Coal creek, between one and two miles east of the rail road, is an enormous deposit of this valuable article, contained in a bed not yet completely exposed, but which appears to be about 60 feet thick.

Northumberland county is watered by numerous streams. The *North* and *West* branches of *Susquehanna* unite at the town of Northumberland, and the river thence forms the western boundary. *Chilisquaque* creek empties into the West branch 5 miles above Northumberland. *Shamokin* creek rises among the mountains and flows westward to the Susquehanna below Sunbury. The *Mahanoy*, a bold rapid stream, rises in Schuylkill county and has a nearly west course to the Susquehanna, near which it receives the waters of Little Mahanoy and Schwaben creek. *Mahontongo* creek forms part of the southern boundary of the county, and *Roaring* creek of the eastern.

Sunbury is the county town, beautifully situated on a level plain on the east side of the Susquehanna, above the mouth of Shamokin creek. It contains a court house, a prison, several churches, and about 250 dwellings. Population 1,108. A considerable business is already done here in the shipment of coal, &c., and the completion of the rail road to Pottsville would tend to increase the prosperity of the town.



Northumberland.

Northumberland is built upon the point of land between the North and West branches of the *Susquehanna* at their junction. It contains a town house, a market house, a bank, an academy, and several churches; the number of its inhabitants is 928. It is not a place of extensive business, though favourably situated at the junction of the North and West branch divisions of the State canal. A beautiful bridge across the West branch connects this

town with Union county; there is another across the North branch over which passes the road leading to Sunbury.

Milton is a flourishing borough on the West branch, 12 miles above Northumberland, with a population of 1,508. Being situated on the canal, in the midst of a fertile and productive neighbourhood, and also the seat of some considerable manufacturing and mechanical establishments, it is a place of some consequence on account of its business operations. It is connected with the Union county side of the river by a bridge.

The principal villages are McEwensville in the north, Georgetown in the south, Shamokin at the coal mines on Shamokin creek, and Snyderstown east of Sunbury.

The most important productions are those of agriculture and of the coal mines. Various branches of manufacturing industry are successfully pursued. A large blast furnace has been recently erected at Shamokin for the purpose of smelting iron with anthracite coal; which is so constructed that the coal is run from the mine on a plane to the head of the furnace, but a few yards distant.

The public improvements are the North and West branch canals which unite at Northumberland; and the western portion of the Pottsville and Danville rail road, which is completed from Sunbury to the coal mines at the town of Shamokin, 21 miles. There is a dam across the Susquehanna below Sunbury, called the Shamokin dam, 2783 feet in length, constructed by the State for the purpose of supplying water to the Susquehanna division of the canal. A turnpike road from Philadelphia, through Reading and Pottsville, extends by Sunbury to Northumberland.

By the assessed valuation of property for the county tax of 1842, the total amount was \$4,353,130: county tax \$9,548: State tax \$5,611.

In some portions of this county popular education is much neglected, and the schools are so conducted as to be of little service in promoting the improvement of youth in the elements of useful knowledge. There are in all 15 school districts, of which 8 have adopted the common school system as regulated by law. Of these 7 have made report, stating that 53 schools are established, and are kept open during an average period of upwards of 5 months in the year. There are academies at Milton, Northumberland, and Sunbury; at the latter place is also a flourishing female seminary.

The religious societies are various: the principal are Presbyterians, Methodists, Lutherans, German Reformed and Baptists, who have in all about 30 places of public worship.

Many of the inhabitants are descendants of English and Irish families who settled here at an early period. In the southern part of the county the population is mostly composed of Germans, who continue to speak their own language.

This is a pleasant region in which to spend the summer months. The scenery is highly beautiful, varied and picturesque; the view from the hills around the town of Northumberland embraces more pleasing objects than are usually met with in a single prospect.

Mountains, hills, farms, towns, canals and rivers are blended in one wide and harmonious landscape, over which the eye may rove for hours and still discover new beauties. As additional attractions may be mentioned pure and wholesome water, a cool and refreshing atmosphere, and a climate remarkable for its salubrity, except in the low grounds along the river, where bilious complaints sometimes occur in the autumnal months.

What counties lie adjacent to Northumberland? What is said of the face of the country? Name the various hills and mountains. Give a general description of the geological features of the county. Where does iron ore occur, and of what kind? In what parts of the county is limestone? Where is found an ore containing lead and zinc? Near what place is coal mined? Describe the coal beds in the neighbourhood. What rivers are in this county? Mention the principal creeks, and where flowing. Name the county town and describe its situation. What town is at the junction of the North and West branches, and what is said of it? Where is Milton, and what are its facilities for business? What villages are noticed? What are the most important productions? Describe the furnace at Shamokin. What public improvements are in this county? What is said of the Shamokin dam? What turnpike road? Give some account of the condition of education,—of the schools, academies, &c.? What are the principal religious societies? From what people are the inhabitants derived? What is said of the scenery and other attractions of this region?

43. PERRY COUNTY.

Perry county has the Susquehanna river on the east, Cumberland county on the south, Franklin on the south-west, and Juniata on the north-west. Its population by the census of 1840 was 17,096.

The Kittatiny or Blue mountain forms the southern boundary, and the Tuscarora the north-western, enclosing the county in the form of a triangle, of which the Susquehanna river forms the eastern side. The face of the country between these mountains is broken by a number of lesser hills and ridges.

The geological character of this county will perhaps be best understood by considering the several rock formations which it contains in a descending order, beginning with the highest. Two synclinal axes or lines of depression pass across from the troughs of the coal basins on the east of the river, rising gradually to the south-west and causing the rocks extending around their ends to die out and disappear successively in this direction. Thus we find the red shale (XI) which underlies the conglomerate floor of the coal fields, extending across the Susquehanna above the town of Dauphin, and occupying a little nook or cove on the west side of the river; and again above Millersburg the same formation, the red shale of Lykens' valley, crossing into Perry county and occupying a triangular area enclosed by Buffalo mountain. The sandstone (X) next in order below this red shale encloses it in Cove mountain, which is the union of Peters' and Second mountains; and in the north in Buffalo, which is an extension of Mahontongo mountain joining with Berry's. Outside of these enclosing ridges we have red shales and sandstones (IX) extending for some distance on the river, and then uniting at the western points of the mountains and stretching for some miles up Sherman's and Buffalo creeks. The next inferior series (VIII,) composed chiefly of olive coloured slates with strata of gray sandstone, beginning on the Susquehanna near the mouth of Fishing creek,

ranges westward, widens out east of Landisburg, and thence sweeps round on the north of the red shale and sandstone of Sherman's creek, again reaching the Susquehanna above Halifax. Here it unites with the corresponding formation of the northern basin, which extends westward on the north of Bloomfield to a point on the head waters of Sherman's creek, north-east of Moreland church, whence its northern division passes north-eastward, crosses the Juniata below Millerstown and reaches the Susquehanna above Liverpool. The exterior limit of the area occupied by the last mentioned series is generally marked by a range of hills and ridges containing the coarse fossiliferous sandstone (VII) with the accompanying limestone (VI) next below in geological position. These extend on the north of the Blue mountain as far as Wagner's gap, where they pass northward near Landisburg, and then north-eastward by Bloomfield across the Juniata on the east. From the neighbourhood of Bloomfield, the northern division of these formations passes westward to near Germantown, and there, folding back to the north-east, crosses the Juniata near Millerstown, and extends by Pfoutz's valley to the Susquehanna. The red and variegated shales (V) lying between the last mentioned limestone and the sandstone (IV) of the Kittatiny and Tuscarora mountains, are seen in a narrow belt along the northern side of the former, until widening out in the neighbourhood of Landisburg, it extends north-eastward nearly to Bloomfield, and up Sherman's creek to the foot of Conecocheague ridge, and thence north-eastward along the base of Tuscarora mountain to the Juniata, and so on towards the Susquehanna. Iron ore is found at several places in various parts of the county.

The soil, where it is not too much broken by stony ridges, is mostly productive; that portion of it which is formed from the decomposition of calcareous rocks is highly fertile, and when well cultivated produces abundant crops.

The *Susquehanna* river flows along the eastern side of the county: the *Juniata* passes through it south-eastward and empties into the *Susquehanna* at Duncan's island. *Sherman's* creek is a considerable stream in the southern part; *Buffalo* creek runs eastward to the Juniata; *Rackoon* and *Cocalamus* creeks fall into that river on opposite sides near Millerstown.

Bloomfield, the seat of justice, is situated towards the eastern part of the county, and has upwards of 400 inhabitants. The public buildings are those usual in small county towns, namely, court house, prison, academy, and several churches.

Millerstown, on the east side of the Juniata, has a population of nearly 400, and *Newport* on the opposite side, about five miles below, exceeds that number. *Liverpool*, on the *Susquehanna*, near the north-eastern corner of Perry, has upwards of 450 inhabitants; and *Petersburg* in the south-east, at the junction of Sherman's creek with the *Susquehanna*, has a little more than 200. Beside these the county contains a number of villages, among which are Landisburg, Ickesburg, and Buffalo.

The principal productions are those of agriculture. Iron is manufactured to some extent, there being within the county eight furnaces, with some forges, rolling mills and nail works. *Duncannon* iron works, at the mouth of Sherman's creek, is an extensive establishment, having a great command of water power, which is employed in driving a large rolling mill, nail works, &c. There are 24 flour mills and 26 grist mills, which manufac-

ture flour to a large amount, mostly from the wheat of the county.

Assessed value of property subject to taxation for county purposes in 1842, \$3,226,780: county tax \$8,166: State tax \$3,854.

Two lines of the public improvements pass through Perry county. The Susquehanna division of the State canal is on the west side of the Susquehanna river, and the Juniata division branches from it, extending up the Juniata. The northern turnpike, from Harrisburg to the west, also crosses into this county at Duncan's island, and passes up the northern side of the Juniata. There are some good common roads, but many of them are rough, owing to the nature of the country.

Popular education has been much neglected in this county, though at present the common school system is adopted in all the districts, 17 in number. One hundred and eleven schools are established; but being kept open for instruction only during an average period of 3½ months in the year, but little benefit can be derived from them.

The inhabitants are chiefly of German and Irish origin: Germans are numerous in some parts of the county, and generally speak their own language, though there are few who do not understand English. The religious denominations are various;—Presbyterian, German Reformed, Methodists, &c., who have altogether about thirty places of public worship.

How is Perry county bounded? What are the mountains, and general face of the country? Describe the range of the principal geological formations? What is said of the soil? What two rivers are in this county? What other streams? What is the county town? Where are Millers-town and Newport? Liverpool? Petersburg? Name some of the villages. Of what kind are the chief productions? What is said of the number and extent of the iron works, &c.? Mention what two divisions of the State canal pass through this county, and what turnpike road. What is the condition of education and common schools? From whom are the inhabitants mostly descended, and what language besides English is spoken? Name the prevailing religious societies, and the number of places of worship.

44. PHILADELPHIA CITY AND COUNTY.

Philadelphia county is bounded north-west and north by Montgomery; north-east by Bucks; south-east and south by the river Delaware; and west by Delaware county. Total population, including the city, 258,037, which is distributed among the different districts as follows: City proper 93,665; Northern Liberties 34,474; Spring Garden 27,849; Kensington 22,314; Southwark 27,548; Moyamensing 14,573; Townships 37,614.

The face of the country along the Delaware is level; but at a little distance from the river it becomes more hilly and undulating. The soil, though not generally of a very fertile nature, has been so highly improved by cultivation, as to produce excellent crops of grain and grass. Near the city, much of it is occupied by gar-

dens for the production of vegetables for market, and by grass lots for hay and pasturage.

The rocks of this county belong to the primary class, and in the southern and eastern portions are generally covered by a deep deposit of diluvial soil, except where they are exposed along the courses of the streams. The prevailing variety of rock is a gray granitic gneiss, which is quarried in the vicinity of Fairmount, at the falls of Schuylkill, and various other places in the neighbourhood of the city, supplying a large quantity of stone for building and other purposes. Veins of coarse granite frequently occur, in which the quartz, feldspar and mica, instead of being intimately blended, are found adhering together in irregular masses, forming a rough amorphous rock, which is very subject to decay, from the natural tendency of the feldspar to decomposition by atmospheric influence. Some beds of the gneiss also exhibit the same disposition to decay from exposure. Occasional bands of hornblende rock appear among the gneiss; and proceeding northward we find the quantity of mica contained in the rocks to be greatly increased, while that of the feldspar is much diminished. From the mouth of Wissahiccon to some distance above Manayunk, the prevailing rock is mica slate; beyond which is a belt of magnesian rocks, consisting of steatite, talc and serpentine, crossing the Schuylkill near the line of Montgomery county. The steatite or soapstone rock has been quarried to considerable extent, for the various purposes to which that material is adapted. Garnets are abundant in the mica slate along the Wissahiccon, and in the neighbourhood of Germantown, where are also staurotide, cyanite, and actinolite: beryl, tourmalin and phosphate of lime sometimes occur in the gneiss. Foliated oxide of iron is found in the quartz rocks, and octohedral crystals of iron in the chlorite slate which accompanies the serpentine. A curiously radiated asbestos, and asbestoid actinolite are found on the Wissahiccon about eight miles from the city. Zeolite and laumonite occur in the rocks on the east side of Schuylkill above the Columbia rail road bridge, and other interesting minerals in different parts of the county.

Besides the *Delaware* and *Schuylkill* rivers, this county is watered by several creeks, which afford seats for numerous mills, factories, and various other purposes for which water power is required. *Poquessing* or *Poqueston* creek is the north-eastern boundary, separating Philadelphia from Bucks; below this is *Pennypack* creek, flowing south-eastward from Montgomery county, by Bustleton and Holmesburg to the Delaware. *Tacony*, or Frankford creek, rises by two branches which unite above Frankford and fall into the Delaware at Bridesburg. *Wissahiccon* is a beautiful stream, flowing southward from Montgomery county, and falling into the Schuylkill about six miles above the city. This stream is remarkable for the romantic and picturesque beauty of the scenery along its high and rocky banks.

The climate of Philadelphia may in general be justly termed healthy and pleasant; being less subject to extremes of temperature than many other parts of the State. In summer the thermometer seldom indicates a greater degree of heat than 95°, and in the coldest weather of winter rarely, if ever, falls to 0; while in the middle and northern counties it is frequently from 10 to 20° below this point. Snows are less frequent in winter, and continue on the ground for a shorter time, than in those parts of the State which are more elevated above the level of tide water.

Excellent turnpike roads lead from the city in every direction,

and substantial bridges, mostly of stone, are constructed over the streams. There are seven bridges across the Schuylkill in Philadelphia county: the rail road bridge at Gray's ferry, below the city, one side of which is appropriated to vehicles and foot passengers; the Permanent bridge at Market street; the Wire suspension bridge at Fairmount; the Columbia rail road bridge, which has also a way for carriages and foot passengers; one at the Falls of Schuylkill, five miles above the city; one at Manayunk; and another a short distance above that town at Flat rock. The Permanent bridge was erected by an incorporated company, and was finished in 1805 at a cost of about \$300,000. It is now open for public use free from tolls, having been purchased from the company a few years since and placed under the care of the city authorities. The new Wire bridge at Fairmount is much admired for the ingenuity of its construction, as well as for its light and beautiful appearance. It is also a free bridge, having been erected by the county in 1841, at a cost of \$55,000.

The city of *Philadelphia*, the metropolis of the State, and the largest city in the United States except New York, is situated between the Delaware and Schuylkill rivers about five miles above their junction. The distance between the two rivers on Market street is about two miles; but as they curve towards each other at this place, the distance widens above and below that street. The extent of the city front on the Delaware, from the lower part of Southwark to the upper end of Kensington, is about four and a half miles. The *city proper*, or that part which is incorporated by the city charter and under the jurisdiction of the corporation, extends from the Delaware on the east to the Schuylkill on the west; and from Vine street on the north to Cedar or South street on the south. The adjoining districts of Southwark, Moyamensing, Northern Liberties, Kensington, Spring Garden, &c., though belonging to the *county* of Philadelphia, and governed by their own separate municipal authorities unconnected with the city, yet, being closely built and densely populated, may be considered as forming a portion of the city in a general and descriptive view.

Numerous families of Swedes had settled along the Delaware below the mouth of Schuylkill as early as 1642, and their settlements extending up the river into Wicacoa, Moyamensing and Passaiung, a log church was erected at Wicacoa in 1677, five years before the arrival of the colony under William Penn. It appears from old records that about 800 acres of ground, partly in what is now the lower portion of the city about the navy yard, were granted by the Dutch governor in 1664 to a Swedish family named Sven, or Sven-sæner, the sons of Sven,—called Swenson or Swanson by the English; and this land was in their possession at the time of Penn's arrival, who finding it within the limits of his proposed city, gave them in exchange for it a tract on the Schuylkill above Fairmount.

Soon after his arrival in 1682, Penn held a treaty with the Indians at Shackamaxon (Kensington,) under a great elm tree near the bank of the river, at which certain grants of land were confirmed, and the most amicable relations established between the natives and their newly arrived visitors. This tree was long held in veneration, and during the revolutionary war, while Philadelphia was occupied by British troops, a guard was placed to preserve it from being felled by the soldiers for fuel. It stood to mark the memorable spot until 1810, when it was blown down, and much of its wood made into work stands, chairs, cups, and other articles to be preserved as relics. Its age, as ascertained by counting its circles of annual growth, was 283 years, having been 155 years old at the time the treaty was held under its branches. A marble monument, with an appro-

priate inscription, has since been erected by the Penn Society on the spot formerly occupied by this venerable tree, in order to perpetuate its memory.

The town was laid out in 1682; the first English colonists erecting temporary huts for their accommodation, and many living in caves excavated in the high bank along the river, until the timber and bushes could be cleared away and more commodious dwellings erected. William Penn himself did not come over with his first colonists; but landed at Newcastle in October 1682, going from thence to Upland, now Chester, to hold the first assembly, and thence proceeding with some of his friends in a boat to Philadelphia. The spot where he first set foot within the infant city seems to have been at the "Blue anchor," one of the first built houses, which stood near the mouth of Dock creek, at a place which is now the north-west corner of Front and Dock streets. This was for some time the centre of business, having a ferry across Dock creek (then of considerable width, but now entirely arched over and its place filled up) to Society hill on the south; and another to Windmill island, so named from a windmill having been erected there for grinding grain: it was also the place where small vessels employed in the primitive traffic usually landed. The first houses were chiefly built on Front street from Dock to Race, and on Society hill, about Pine and Front streets southward. For several years there was scarcely a dwelling west of Third street, and a Friends' meeting house having been erected at or near Centre square, benches were placed under the trees in the woods at the corner of Market and Sixth street, that the people might rest in the middle of their long walk from the city to the meeting house. For a long time the whole space from Eighth street to the Schuylkill was covered with forest trees, and after they were cut down it remained an open grass common for pasturing cattle. Within the memory of persons yet living, there were but few houses west of Sixth street.

By the close of the year 1682, twenty three ships had arrived with passengers, and numbers following in the succeeding year, the population increased so rapidly that at the departure of Penn for England in 1684, the city contained 2,500 inhabitants. Numerous settlements were established in the surrounding country, agriculture and commerce soon began to flourish, and the tide of emigration from England, Wales, Ireland and Germany, added greatly to the population of the colony. The city was incorporated by charter from the proprietary, October 25, 1701. The general assembly of the province, which had previously met at Upland, held their first session at Philadelphia in 1683, in the Friends' meeting house, where they continued to meet until the court house at Second and Market streets was built and prepared for their reception in 1707.

The State house, now called Independence hall, was begun in 1729 and finished in 1735, on the northern side of the square bounded by Chestnut, Walnut, Fifth and Sixth streets. The wings extending from the main building to Fifth and Sixth streets are of modern construction. The wood work of the steeple by which the building was at first surmounted, was found to be so much decayed that about the year 1774 it was taken down, leaving only a small belfry to cover the bell for the use of the town clock; and so remained until 1829, when the present steeple was erected on the plan of the original one which had been removed. The bell for the first steeple was imported from England in 1752, but was broken by accident when first hung up. A new one was cast in Philadelphia, under the direction of Isaac Norris, then speaker of the Colonial assembly, to whom we are probably indebted for the remarkable motto inscribed upon it, and which at that early day was little thought to be so singularly prophetic of its future use: "*Proclaim liberty throughout the land, and to all the people thereof.*" Twenty-four years afterwards a period arrived "in the course of human events," when the memorable Declaration of Independence was signed in the building beneath this very bell, and its joyous tones rang loud and clear as it proclaimed to anxious thousands that they were now a free

and independent people. The chamber in which the declaration was signed is on the first floor, at the eastern end of the centre building. Some years since the interior wood work was removed to make room for more modern decorations; but a more patriotic feeling and a better taste than those which had dictated this change, soon demanded the restoration of the hall to its original simplicity, and it now presents the same appearance as it did when the representatives of the people, assembled within it, declared these United States to be "free, sovereign and independent."



State House, Philadelphia.

The spirit of change and improvement has been so busy in Philadelphia as to leave us but few relics of the olden time to show the character of its primitive architecture. One of the oldest buildings now standing, is the house occupied by William Penn in 1700, at the south-east corner of Norris' alley and Second street. The Swedish church, on Swanson street in Southwark, near the navy yard, was built in 1700, on or near the place where stood the log church of Wicacoa, erected in 1677. The present quaint and antiquated little brick building was considered as a great edifice at the time of its erection, and had not its equal in the city. Christ church, in Second street above Market, was originally a one story wooden building erected in 1695, having its bell hung in a tree growing near it. It was enlarged in 1710; and in 1727 the western end, as we now see it, was raised, the eastern end not being completed until 1731.

St. Michael's Lutheran church, in Fifth street above Arch, is a venerable old edifice erected in 1743, and its centennial anniversary has just been celebrated.

Plan of the city.—The general plan of the city is remarkably uniform and regular; the streets with some few exceptions crossing each other at right angles; those leading from river to river having a direction very nearly from east to west, and those which cross them being nearly north and south. The carriage ways are paved with rounded pebbles, bedded in gravel, forming a dry and durable, but somewhat rough surface. Paving with wooden blocks has been tried as an experiment; but though pleasing to the eye and agreeable to the traveller, these pavements have been found to decay so rapidly as to lead to the abandonment of the plan. Chesnut street from Fourth to Sixth has been recently paved with square blocks of stone, which, though expensive at first, promises to combine the essential requisites of smoothness and durability in a greater degree than any other mode yet tried. The side walks are universally paved with bricks, except in a few instances where a better taste has led to the use of smooth well dressed flag stones. The city is drained by common sewers, or arched culverts of brick work, constructed under most of the main streets.

Public Squares.—It is to the wise and liberal foresight of the great founder

of Pennsylvania that we owe most of the public squares which now ornament our city. In the original plan, as laid out by Thomas Holmes, Penn's surveyor general in 1682, there was to be a public square in the centre containing ten acres, and one in each quarter of the city containing eight acres. By the same plan it was also intended to leave an open space between Front street and the Delaware, and Penn long resisted the applications of the inhabitants to build nearer the river. But at last, owing perhaps to his pecuniary embarrassments, he unhappily consented to the sale of lots on the river bank; thus depriving his favourite city of a healthful and open area along the wharves for the landing of merchandise and the transaction of business; as well as destroying the symmetry of the city front, and creating a crowded, dark and unsightly mass of buildings which makes an unfavourable impression upon the mind of every stranger entering in that direction.

It was intended by the proprietor that the public buildings should be erected on the centre square at Market and Broad streets; but its great distance from the then closely built part of the city probably led to the purchase of the square between Chestnut, Walnut, Fifth and Sixth streets, since called Independence square. The northern part of this lot was first purchased, and the State house erected in 1735; in 1760 the southern part, fronting on Walnut street, was purchased, and the whole square surrounded by a brick wall, which was afterwards removed to give place to the present more graceful iron palisade. Though this is the general place of meeting for civic and political assemblages when they are to be harangued on such a great scale that no house or hall will hold them, and also the resort of prodigious crowds on the day of the general elections; yet much to the credit of the population at these periods of excitement, no injury is offered to the trees and other ornaments of the place, which always presents the same neat and orderly aspect.

Washington square, on Sixth street between Walnut and Locust, was for many years used as a public burial ground for the poor and for strangers, under the name of the Potters' field. About the year 1795, the extension of improvements and buildings into this quarter induced the city authorities to close it against future interments. Its improvement as a public square commenced in 1815, when a variety of trees were planted, gravel walks laid out, and other steps taken which have led to its present attractive appearance. It is intended to erect, in the centre of this square, a monument to the memory of Washington; the corner stone having been laid with due ceremony at the celebration of his birth day, on the 22d of February, 1833.

Franklin square is on Sixth street between Race and Vine, being also laid out with gravel walks and planted with trees, affording a public promenade equally agreeable with Washington square. A magnificent fountain, surrounded by a marble basin, has been constructed in the centre, supplied with water from the works at Fairmount.

Logan square, named after James Logan, the friend and secretary of William Penn, and Rittenhouse square, after David Rittenhouse, the philosopher and statesman, are both on Schuylkill Fifth street; the former between Race and Vine, and the latter between Walnut and Locust. They are both enclosed and planted with trees, and promise in a few years to present an appearance similar to Washington and Franklin squares, affording to the inhabitants of the western part of the city, cool and shady walks of equal attraction to those now enjoyed in the eastern squares.

Penn square, at the intersection of Market and Broad streets, was, within the recollection of many now living, not a square but a circle, having the street passing round it and enclosing the distributing reservoir of the city water works. On the construction of the reservoir at Fairmount, the old marble building in Centre square was taken down, and Market and Broad streets were opened directly through the square, dividing it into four distinct enclosures, the public benefit of which seems to be thus far confined to the production of tolerable crops of grass.

Buildings.—The dwellings are mostly built of brick; the general style of the architecture being plain and neat, rather than showy and ornamental. White marble is generally used for door steps, window sills, &c., and many of the modern buildings have the basement story faced in front with this material. A number of the public buildings present an entire exterior of marble, from the quarries of Montgomery and Chester counties; the abundant supply which they yield having added greatly to the architectural embellishment of the city. Of the many splendid marble edifices with which Philadelphia is adorned, the most conspicuous for their size and the beauty of their architectural design are the Girard college, the United States and Pennsylvania banking houses, the Merchants' Exchange, the United States' mint, the Marine hospital or Naval asylum, and some others.

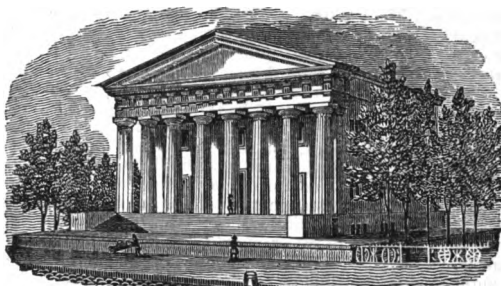


Girard College..

The Girard college occupies a commanding position on high ground about a mile north-west of the incorporated limits of the city. The lot on which it stands contains about forty five acres, and was bequeathed for this purpose by the founder of the institution. The college buildings consist of a centre edifice which is to be exclusively devoted to the purposes of education, and four other buildings, two on each side, for the residence and accommodation of professors, teachers, and scholars. The centre building, which forms the most conspicuous object, and at once rivets the attention of the beholder by its immense proportions, its beautiful columns and gorgeous capitals, is two hundred and eighteen feet in length from north to south, one hundred and sixty feet in breadth from east to west, and ninety-seven feet in height. It is surrounded by thirty-four columns, supporting an entablature after the manner of a Grecian temple. Each column, including its capital and base, is fifty-five feet high and six feet in diameter, having a base three feet high and nine feet in diameter, and leaving a space of fifteen feet between the columns and the body of the building. At each end is a door of entrance sixteen feet wide and thirty two feet high, decorated with massive architraves surmounted by a sculptured cornice. Each of these doors opens into a vestibule 26 feet wide and 48 feet long, the ceiling of which is supported by eight marble columns and eight antæ of the Ionic order. In the second story, over these vestibules, are lobbies of similar dimensions, having their ceilings supported by Corinthian columns. In each corner of the building are marble stairways, lighted from the roof. On each floor are four rooms of 50 feet square; the ceilings of those on the first and second stories being groin arched, and those on the third vaulted, with a central sky-light so formed as not to protrude above the roof. The roof, floors and stairways, are constructed of marble, no wood being used except for doors. The building is warmed by means of furnaces built in the cellar, and has flues for ventilation constructed in the interior walls.

The remaining four buildings, situated two on each side of the main building, are each 52 feet wide by 125 feet long, and two stories high above the basement. The most eastern of these, intended for the use of the professors, is so constructed as to accommodate four distinct families with all the conveniences of private dwellings. The other three buildings are designed for the residence and accommodation of the pupils.

The United States' Bank is one of the most chaste specimens of Grecian architecture in this country. It is an imitation of the Parthenon, a temple of the Doric order at Athens, with the omission of the colonnades on the sides and some other decorations. The platform on which the building is erected is 87 feet in front by 161 feet deep, having marble steps ascending to the portico. Eight columns, four feet six inches in diameter, support a plain entablature and pediment. The large banking room in the centre of the building is 81 feet long and 48 feet wide, richly ornamented with fluted Ionic columns, and sculptured embellishments. Adjoining this are several smaller apartments used for various purposes; the whole interior arrangement of the building being admirably adapted to the business for which it was designed. This edifice was commenced in 1819, and finished in 1824, at a cost of about \$500,000.



United States' Bank.

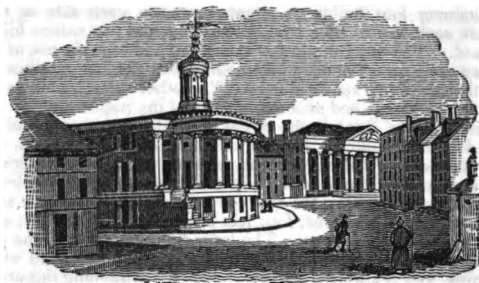
The Bank of Pennsylvania is a beautiful edifice of white marble, designed from a Greek temple near Athens, and is one of the purest specimens of Grecian architecture to be met with in the United States. It has a portico on each front, with six Ionic columns, supporting an entablature and pediment; the entire building being 125 feet long and 51 feet wide. The enclosure in which it stands is tastefully ornamented with plants and shrubbery, and surrounded by an iron railing.

The Girard Bank has a marble front, enriched by a portico and six Corinthian columns; the sides and back of the building being composed of red brick walls, which offer a strange contrast with the Grecian style of its front.

Several of the other banking houses are handsome and spacious buildings, but erected in a plainer style of architecture than those already mentioned.

The Merchants' Exchange is a noble edifice erected on the triangular space between Third, Walnut and Dock streets, and constituting the central point of commercial and financial business transactions. The eastern façade, fronting on Dock street, presents a semicircular piazza supported by Corinthian pillars, standing upon a basement about 12 feet high, being richly ornamented with sculpture, and producing a beautiful and imposing effect.

Some of the other prominent buildings in the city and adjoining districts will be described in our notice of the institutions to which they belong, or of the objects for which they were erected.



Merchants' Exchange.

Water works.—Before the erection of the works at Fairmount, the city was supplied with water from the Schuylkill by means of two steam engines, one on Chestnut street near the river, and the other at the intersection of Broad and Market streets. By the first the water was forced into a tunnel extending along Chestnut and Broad streets to the engine at Centre, now called Penn square, where it was elevated by the second engine into a reservoir 36 feet high, and thence conveyed in wooden pipes through the city. This arrangement being found to be totally inadequate to the supply required, after a cost of \$657,398 from its commencement in 1799, was finally abandoned in 1815. In 1812 the construction of steam works at Fairmount was commenced, and in 1815 was so far completed as to be put in operation. But it soon became apparent that the small and expensive supply thus obtained would not meet the demand of a great and growing city, and that some other system must be adopted better calculated to secure the great objects of economy and abundance. Accordingly, in 1818, after expending \$320,699 in the erection and support of these works, the city councils, in compliance with a recommendation of the watering committee, authorized the erection of the dam and water works now in operation; the first wheel was put in motion July 1, 1822, and on the 25th of October the steam works were stopped.



Fairmount.

The city and adjoining districts are now abundantly supplied with excellent water by means of these hydraulic works, which are situated on the east side of the Schuylkill above the city. The mount is an oval shaped eminence, and on its top, which is 102 feet above the water in the river, and upwards of 50 feet above the highest ground in the city, are four reservoirs containing together about 22,000,000 of gallons. These reservoirs are enclosed by

a paling, and surrounded by a gravel walk, having a flight of steps ascending to it on the west, and being attained by several sloping ascents on the east. The requisite power for propelling the machinery is obtained by means of a dam 1600 feet in length, thrown across the river, from which a race upwards of 400 feet long and 90 feet wide, excavated from the solid rock, conveys the water to the forebays in front of the wheels. The mill house is of stone, 238 feet long and 56 feet wide, being calculated for eight water wheels each 15 feet in length and from 14 to 18 feet in diameter. These wheels have iron shafts weighing about five tons each, and in most of them the arms and rims are also of iron. To each shaft is affixed a crank, working a double forcing pump by which the water is raised into the reservoirs. The pumps have a diameter of 16 inches with a stroke of five feet, making from 12 to 13 strokes in a minute; each pump raising about a million and a quarter of gallons in 24 hours, and being connected with an iron main 16 inches in diameter, which passes across the bottom of the race and up the side of the mount into the reservoir, 92 feet above the level of the dam. The reservoirs cover an area of upwards of six acres; they are twelve feet deep, lined with stone and paved with bricks laid upon a bed of clay in strong lime cement, and made water-tight. The water is conveyed from them into the city by two iron mains, one of 20 and the other 22 inches in diameter; from which branches from 6 to 10 inches in diameter are laid through the principal streets, and from these smaller ones into the other streets and alleys. From the main pipes the water is conveyed into the yards and dwellings by small lead or iron pipes. Fire plugs are placed in the streets at convenient distances, to which, on the breaking out of a fire, leathern hose may be attached, by means of which water is supplied to the engines or carried into any accessible part of the burning building. These fire plugs also furnish copious streams of water with which the streets are washed almost daily during the warm season. Beneath the pavements are numerous cisterns supplied with water from the main pipes, having pumps inserted for public use.

The consumption of water in the city and districts, during the year 1842, amounted to an average daily supply of 4,297,480 gallons, distributed to 25,816 tenants, and equal to 167 gallons daily for each tenant.

The length of iron pipes laid in the city at the close of 1842 was 64½ miles, and in the districts 51 miles, making a total of 115 miles. The number of fire plugs in the city is 524, and in the districts 531: total 1055.

The cost of erecting the present works in 1822, with the additions of permanent work annually made (not including repairs to the dam) up to the end of the year 1842, amounts to about \$1,500,000. In 1818 the expense of working one steam engine and pump for one year was \$30,858; and with this expenditure not more than 1,600,000 gallons could be raised in 24 hours. At this rate the expense of supplying the city by steam power, with the same quantity of water now used, would be \$227 per day; while the present expense of the water power, for attendants' wages, oil, fuel, &c., is about \$7 per day.

Gas Works.—The principal streets, most of the stores, hotels, churches, public institutions, and many of the private dwellings are lighted with gas, supplied from the City gas works on the Schuylkill, between Market and Filbert streets. These works, originally constructed by a company, but now owned by the city, consist of a retort house capable of containing 120 retorts with all their connexions with the refrigerating and purifying apparatus; three large station meters for measuring the gas as it is manufactured; suitable workshops, offices, laboratory, &c. On the eastern part of the lot are eight gasometers of fifty feet each in diameter, capable of containing altogether 280,000 cubic feet of gas. From these the gas is distributed throughout the city by means of iron pipes laid under ground along the streets, in the same manner as the Schuylkill water is conducted, with small pipes to lead the gas from the street mains into the houses and to the public lamps. The total length of street mains in 1842 was 35½ miles.

The demand for gas is steadily increasing, and its use rapidly extending throughout the city. The quantity supplied during the year 1842 was 50,811,000 cubic feet, which was produced from 187,147 bushels of coal and 500 barrels of rosin. The fuel used consisted of 54,536 bushels of coke, which is a residuum left in the retorts after the gas has been expelled from the coal, and is produced in such quantity as not only to supply all the fuel used for heating the retorts, but also a large surplus for sale. The number of private lights in use in 1842 was 27,240, and 778 street lamps supplied with gas, besides those in the market-houses and public squares.

Gas works have also been constructed in the Northern Liberties by a company for the purpose of supplying that district, Kensington, &c. Their structure and management are similar to those in the city.

Provisions, fuel, &c.—There is, perhaps, no city in the world which exceeds Philadelphia in the abundance, excellence, and cheapness of the provisions furnished by its markets. Butchers' meat in all its variety, and poultry of various kinds are plentiful at all seasons of the year; fresh fish is obtained from the neighbouring rivers, and sea fish brought from the ocean preserved in ice. Fresh butter is brought in daily by the farmers; milk and cream by the milkmen in the vicinity of the city; and the fruit and vegetables supplied by the orchards and gardens of the neighbouring parts of our own State and of New Jersey, are not surpassed in variety and goodness by those of any other market in the country.

Fuel is an important item in the necessary supplies of a large city, and in this respect Philadelphia is eminently fortunate. The rivers which wash this city on both sides flow from mountains containing inexhaustible stores of anthracite coal, and the canals and rail roads which have been constructed along their banks furnish a cheap and easy means of transportation to the city, not only for its own supply, but for shipment to other places less favourably situated for obtaining this now almost indispensable article of use. The consumption of wood is still considerable, its price having been much reduced since the general introduction of coal as a fuel. The wood sold on our wharves is chiefly brought up the river from the lower parts of New Jersey and Delaware.

Resources, trade, &c.—While thus bountifully supplied with all the necessities of life, Philadelphia is not deficient in those articles of luxury, ornament and taste in which the wealthier portion of the population of large cities usually indulge. Her extensive domestic and foreign trade, her numerous manufactories, the extension of her buildings and other improvements, while they employ the capital and enterprise of the merchant, the manufacturer and the proprietor, create such a demand for labour as to ensure employment to the working classes at such wages as afford them, by the practice of a temperate and prudent economy, not only a decent subsistence, but the means of ameliorating their condition and increasing their fortunes.

The prosperity of this city is perhaps mainly owing to the advantages of a situation which has afforded it such abundant resources of trade, and employment for the enterprise and industry of its inhabitants. Surrounded by a fertile, well cultivated, and populous country, in which the productions of agriculture, manufactures and the mechanic arts are constantly and steadily increasing;—near the confluence of two rivers whose navigation has been improved by public and corporate enterprise;—the point to which important rail roads tend from every direction, facilitating communication and the desirable interchange of the varied productions of our widely extended country,—Philadelphia must continue to advance in business, population and wealth. The Schuylkill river rises in a region abounding in mineral treasures, and flows thence through one of the richest agricultural districts of the State, bearing their united products to the western front of the city; while the Delaware forms the natural outlet for another extensive region, rich in the productions of the mine, the forest and the field, which are floated on its waters to the eastern wharves of this great receptacle and

market for internal produce. From the city to the ocean, the Delaware expands its ample bosom, bearing merchant vessels of the largest class, which carry our produce to other states and to distant climes, bringing us in return such of their productions and merchandise as we require for the supply of our wants of necessity, convenience or luxury.

For an account of the trade, commerce and shipping of the port of Philadelphia, the reader is referred to the general article on that subject at page 129.

Manufactures.—Philadelphia is distinguished for the variety, extent and excellence of her manufactures. The thousands of fabrics which are produced from her numerous factories and workshops by the skill and enterprise of her manufacturers and artisans, supply almost every article which can minister to the necessities, conveniences and comforts of civilized man; and the improvements introduced by the application of scientific principles, happily reduced to mechanical practice by many of our intelligent master workmen and machinists, have given to the mechanic arts of this city a character of eminence and excellence not surpassed by those of any other city in the United States.

The increase in the quantity and value of the various articles manufactured from iron, as well as the improvement in their quality and mode of production, has for the last few years been exceedingly rapid: and the multiplication of foundries and work-shops in this extensive and important branch of manufacturing industry, has kept pace with the increasing demand consequent upon the cheapness and excellence of the articles produced. Our numerous and extensive establishments for the manufacture of steam engines and machinery are surpassed by none in the world for the excellence of their workmanship, and the beauty, strength and effect of the mighty auxiliaries thus added by human science and skill to the power and industry of man. So eminent is the character of our locomotive steam engines, that they are not only sent to most parts of the United States where rail roads have been constructed, but when the traveller in Russia, Austria, and even in England, examines with admiration the locomotive engine which has drawn him with extraordinary velocity and safety over the rail roads of those distant countries, he finds the word *Philadelphia* engraved upon its side. The value of machinery annually manufactured in Philadelphia is estimated, by the census returns of 1840, at nearly \$1,100,000, which is probably, like many of the other census statements, much below the real amount. The manufactures of hardware and cutlery, according to the same authority, amount annually to \$217,445: of the precious metals to \$2,651,510; of other metals to \$876,000.

There are twenty-nine woollen factories, whose annual product is estimated at \$964,450; and forty-five cotton factories producing annually goods worth \$3,157,119; in addition to these are manufactured mixed goods to the yearly amount of \$857,820, and 1912 pounds of silk.

The manufacture of hats and caps, straw bonnets, leather, saddlery and harness, boots and shoes, tobacco, soap and candles, glass, drugs and medicines, earthenware, furniture, &c., employ a large amount of capital and labour. The products of twelve sugar refineries and a number of establishments for making confectionery amount to more than a million of dollars annually; the quantity of distilled and fermented liquors to nearly twelve millions of gallons; and the value of carriages and wagons made in a year to about \$300,000. Paper and manufactures from paper are produced in considerable extent and variety. Books are manufactured to a large amount in the numerous printing offices and binderies; there are 12 daily newspapers, 22 weekly, several semi and tri-weekly papers, besides a number of other periodical publications.

To supply the increasing demand for architectural and ornamental purposes, there are many extensive marble and stone cutting establishments, producing work of superior finish and excellence. The neighbourhood of the city abounds in brick clay of the finest quality, from which our nume-

rous brick yards furnish an abundant supply of bricks of the most beautiful and durable character. The number of houses annually erected is about one thousand, at an aggregate cost of upwards of \$3,000,000.

The building of ships and vessels is carried on in a style creditable to the naval architecture of Philadelphia; and there are numerous rope walks for the manufacture of cordage. The United States' navy yard, in the lower part of the city, extends from Front street to the Delaware, being surrounded by a brick wall enclosing an area of about twelve acres. It contains a number of neat buildings for the accommodation of the officers and marines, work-shops, sheds for storing timber and other necessary supplies for the use of the navy. There are also two immense frame buildings in which ships are built under cover; one being of sufficient size to contain a vessel of the largest class, the great ship *Pennsylvania* having been constructed in it; the other is used for the building of frigates and smaller vessels. The large ship house is 273 feet long, 104 feet wide, and 84 feet high.

The operations of the United States' mint are carried on in a handsome marble edifice, erected for the purpose, in Chestnut near Broad street. The exterior architecture of the building is of the Ionic order, and its interior arrangement is admirably adapted to the various processes of preparing the metal and stamping the coins. The whole machinery requisite for the various operations of coining is driven by steam power, and is of the most ingenious and perfect construction.

Banks and Insurance companies.—There are fourteen banks in operation within the city and county, with an aggregate capital of nearly \$12,000,000; besides a number of saving fund societies, savings' institutions, and loan companies. The marine, fire, life and other insurance companies are upwards of twenty in number, with a total capital of about \$6,000,000.

Fire department.—No city in the Union is more efficiently protected from the ravages of fire than Philadelphia. There are about sixty independent engine and hose companies, composed principally of active young men, and owning fire apparatus of the most excellent and effective character. Many of the hose carriages are beautifully constructed and tastefully ornamented; and most of the engines are built with great attention to elegance of appearance, as well as to their power and effect. The expense of maintaining the fire apparatus is borne by the companies, aided by appropriations from the city and district treasuries.

Municipal government.—In the city proper, the executive authority is vested in the mayor, who is elected annually by the citizens. He is invested with magisterial powers, and acts as head of the police department, having the appointment of the high constables, police officers, watchmen, &c. The legislative power is exercised by a select council of twelve members, four of whom are elected every year; and a common council of twenty members, elected annually. By these councils the necessary ordinances are passed for the government, regulation and general welfare of the city. One alderman is elected in each of the fifteen wards into which the city is divided.

The adjoining incorporated districts are governed by their own separate municipal authorities, distinct from the city proper. The district of the Northern Liberties has a mayor and a board of commissioners; Kensington, Spring Garden, Southwark and Moyamensing have their respective boards of commissioners who have the general regulation of affairs pertaining to the district in which they are elected. The county courts have jurisdiction of cases in both city and county. The sheriff, coroner, county commissioners, auditor and other county officers are elected by the joint votes of the citizens of the city and county.

Finances and taxation.—The expenditures authorized by the corporate authorities of the city and of the several adjoining districts, are defrayed by a tax levied in each, and paid into the respective city and district treasuries. This is separate and distinct from the general county tax, which is as-

essed upon property and persons in city, districts and townships, according to the returns of valuation, and paid into the common treasury of the county. The assessed valuation of property subject to county taxation in the city and the several districts for 1843, with the amount of county and State tax levied upon each, is as follows :

	<i>Ass'd. valuation.</i>	<i>County tax.</i>	<i>State tax.</i>
City . . .	58,688,499	294,784 50	180,383 95
N. Liberties . .	9,224,409	47,923 78	24,639 22
Spring Garden . .	8,862,404	46,133 59	22,384 44
Kensington . . .	4,023,668	20,144 64	8,261 99
Southwark . . .	5,578,619	29,168 44	12,944 54
Moyamensing * . .	2,330,341	12,257 15	5,221 78
Townships . . .	10,613,941	64,240 37	31,928 56
Total,	\$99,321,881	\$514,652 47	\$285,764 28

Prisons.—The Eastern penitentiary, the exterior architecture of which in its towers, battlements and massy walls, resembles some huge, baronial, castellated fortress of the middle ages, is situated on Coates street, east of Fairmount and south of the Girard college. It occupies a square area of about ten acres, which is enclosed by a wall thirty feet high, surmounted at the angles and on each side of the front entrance by watch towers, which from their height and position command a view of the inside and outside of the external walls. Over the outside gate of entrance is a massive wrought iron grating or portcullis, affording light to the space between the outer and inner gate, which are a sufficient distance apart to allow a team and wagon to stand while the outside gate is secured previously to opening the inner one. On each side of the entrance are apartments for the wardens, keepers, apothecary, domestics, &c., of suitable dimensions and conveniently arranged. All the windows in the front building are constructed with iron gratings; the doors have bolts and locks of the most improved plan, and every other precaution is adopted which can contribute to security.

In the centre of the whole enclosure is an observatory or watch-house, from which long passages or corridors radiate in different directions. On each side of these corridors the cells are situated, so that a watchman in the centre observatory commands from that point a view of all the passages and of the entrance to each of the cells. The cells are 12 feet long, 8 feet wide and 10 feet high, having thick partition walls between them, and floored with long curb stones, 10 inches thick, that extend across the whole width of the cell and terminate under the partition walls, thereby preventing escape by excavation. A hollow cone of cast iron is fixed in the solid masonry of the ceiling, at the apex of which is hung, for the admittance of light and ventilation, a convex glass eight inches in diameter, which may be opened and shut at pleasure, but is not attainable by the prisoner as a means of escape or conversation with others. Each cell contains a bed, so contrived as to be raised with its bedding out of the way, and fastened against the wall during the day time. Food is conveyed to the prisoner by means of a cast iron drawer, which also forms a table on the inside, from which the prisoner eats his meals. The cells are warmed by heated air conducted to each from furnaces at the ends of the passages.

From a capacious reservoir beneath the watch-house in the centre of the prison, water is conveyed in iron pipes eight inches in diameter under each of the corridors, to which other pipes are connected, four inches in diameter, leading into each cell, about 16 inches above the floor, and so regulated that the water is kept at a height within six inches of the seat placed over them in the cell. These pipes being kept full of water, the prisoners are prevented from speaking through them to each other, and all offensive smell avoided. The water is let off by sluice gates as often as is neces-

sary, and the pipes thus cleansed from all filth; the gates being stopped, the pipes are again instantaneously filled with a fresh supply from the reservoir. To each cell, in the lower story of the ranges, is attached a yard for exercise, eighteen feet by eight, surrounded by walls about twelve feet high, which are also overlooked from the observatory in the centre of the prison. The passage from each cell into its yard is secured by double doors; one a grate of wrought iron, and the other strongly framed of wood, both having fastenings of the most approved construction. The wooden door is kept open in summer, or when occasion may require, for the free passage of air into the cell; the iron grated one securing the prisoner.

On the arrival of a convict he is placed in a cell and left alone, without employment, books, or any thing which may serve to divert his mind from its meditations on the guilty past, the hopeless present, and the gloomy future. Overcome by these reflections, but few hours usually elapse before he asks for something to do, or for a book. If he has a trade that can be pursued in his cell, he is allowed to work at it as a favour, if he has none, or one that cannot be pursued in his cell, he is permitted to choose one that can be carried on there, and is instructed by one of the overseers. As a reward for good behaviour, a Bible and some other religious and moral books are also given him; employment for both body and mind being granted as a favour and withheld as a punishment. A suitable person is employed to have the care of the moral and religious instruction of the convicts; and when they are addressed in general, the preacher stands near the centre of the corridor in which the ranges of cells are situated, so that each prisoner can hear, in the solitude of his own cell, the religious truths and moral precepts uttered for his edification and instruction.

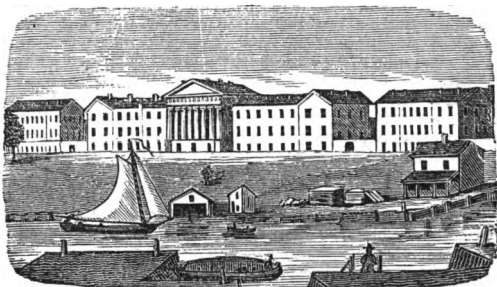
The County prison, on Passyunk road below Federal street, is appropriated to the confinement of persons accused of crimes previous to trial, and of those who are convicted and sentenced to short periods of imprisonment. The front of this spacious building presents a noble and imposing specimen of Gothic architecture, and its whole plan and arrangement are admirably adapted to the purpose for which it was erected,—that of solitary confinement. From the ends of the front edifice two extensive halls run back at right angles with it, containing three tiers of cells on each side; the two upper tiers being approached by means of corridors or galleries, extending the entire length of the halls, which are lighted from the roof. The cells are constructed like those in the Eastern penitentiary, except that they are lighted by apertures in the side walls instead of the ceiling.

The Debtors' prison, adjoining the county prison on the north, is an object of attention from the singular style of architecture displayed on its front, which is of red sandstone. The portal consists of two Egyptian columns, supporting a pediment of corresponding style and dimensions; and the whole front is of a similar massive Egyptian character.

The House of Refuge is at the corner of Coates street and the Ridge road, not far from the Penitentiary. It is appropriated to the confinement of vicious and abandoned juvenile offenders, of both sexes; where, in addition to their moral culture, they are taught the various elementary branches of an English education, and are employed in a variety of mechanical and useful occupations. At the expiration of their terms of confinement, the boys are apprenticed to respectable mechanics or farmers, and the girls to families, where they perform the customary duties of domestics. The establishment is supported by annual appropriations from the State and county, by funds received from the association, and by individual bequests and donations. The law authorises the reception of offenders from all parts of the State; boys under the age of twenty-one, and girls under eighteen.

Alms-house.—The Philadelphia Alms-house, on the west side of Schuylkill opposite Cedar street, is an extensive establishment erected for the relief and employment of the destitute poor. Its benefits are confined to the poor of the city and of the districts of Southwark, Northern Liberties,

Kensington, Spring Garden and Penn township; the other districts of the county having their own separate almshouses, or other modes of providing for their poor.



Philadelphia Almshouse.

The Almshouse edifice is an immense structure, consisting of four main buildings arranged in the form of a parallelogram, covering and enclosing an area of ten acres of ground. The front building, which faces the Schuylkill, presents a very creditable specimen of architecture, having a handsome portico with eight massive pillars thirty feet high; and the site being considerably elevated above the sloping bank of the river, commands an extensive view of the city and the adjacent country. The interior arrangements of the building are on a scale of corresponding magnitude and extent with its exterior appearance and the great number of inmates which it is designed to accommodate. In addition to its uses as a mere almshouse, it is also a house of employment, and contains extensive workshops, with a steam engine which propels machinery for manufacturing purposes.

As a home for the destitute, provided with every necessary convenience for the comfort and accommodation of those whom misfortune, improvidence or intemperance may have driven to seek shelter within its walls, it is not surprising that the ample provisions of the Almshouse should be shared by so many of those indigent and miserable victims of poverty to be found among the crowded population of the city and its suburbs. The average number of paupers maintained in the establishment during the year ending May 16, 1842, was 1546, of whom 750 were men, 639 women, and 157 children. The number is always greatly augmented on the approach of winter, and diminished on the return of spring: in January there were in the house 1871 paupers, and in May but 1347. The institution is governed by a board of guardians consisting of 12 persons, of whom six are elected by the City councils, two by the Commissioners of Northern Liberties, two by those of Southwark, one by those of Kensington, and one by those of Spring Garden for that district and Penn township. The amount of poor tax assessed for the year 1842, was as follows:

City of Philadelphia,	\$120,971 41
Northern Liberties,	23,376 43
Southwark,	11,167 58
Kensington,	8,723 99
Spring Garden and Penn township, . .	19,854 70

Total, \$184,094 16

Charitable Institutions.—The Pennsylvania Hospital was founded in 1752, chiefly by the exertions of Drs. Franklin and Bond, through whose influence public grants and individual donations were made to an amount sufficient to establish the institution. Its funds have since been so much

increased by permanent bequests, and other means, as to enable it greatly to extend the sphere of its usefulness. The buildings, grounds and garden occupy the entire square bounded by Eighth, Ninth, Spruce and Pine streets. The principal front is on Pine street, having a handsome open area, in which stands a bronzed statue of William Penn. Its spacious buildings afford accommodations for indigent patients, as well as those who pay; and any one injured by an accident is always received without charge, if brought within 24 hours after its occurrence. There is a fine anatomical museum, and a very extensive library of books, chiefly on subjects appropriate to the institution. In the rear of the lot, fronting on Spruce street, is a building erected for the exhibition of West's celebrated picture of Christ healing the sick, which was presented to the Hospital by that distinguished artist.

The Insane Asylum, a branch of the Pennsylvania Hospital, for the reception and cure of insane patients, has been recently erected between the West Chester and Haverford roads, about two miles west of the Schuylkill. The farm contains one hundred and eleven acres, of which forty-one are enclosed by a substantial wall, as a garden and pleasure ground for the patients. The centre building and main wings present a front of 436 feet, having a basement and two principal stories: the whole edifice containing 204 rooms suitable for the accommodations of patients and their attendants. The entire plan of construction and arrangement is on the most judicious and liberal scale, and specially adapted to the benevolent purposes of the institution.

The U. S. Marine Hospital, or Naval Asylum, was originally projected by the officers of the Navy, who, with the common sailors, have for many years contributed a portion of their pay as a fund for the erection and support of the establishment, which is intended as an asylum for invalid seamen and officers disabled in the service. The building is situated on the Gray's Ferry road, below Cedar street, and presents a white marble front of 386 feet, embellished by a portico with eight Ionic columns, having on each side balconies resting upon iron pillars; the whole forming a façade of great beauty. This edifice is of sufficient capacity to lodge about 400 persons, and is partly occupied as a Naval school.

The Pennsylvania Institution for the Deaf and Dumb is at the corner of Broad and Pine streets, having extensive buildings adapted to the purposes of the establishment. In addition to literary and moral instruction, the pupils are taught some mechanical trade by which they may be enabled to provide for themselves in after life. Most of them are supported by funds received from the State; some by the states of Maryland, New Jersey and Delaware; and some by their friends or the institution.

The Pennsylvania Institution for the instruction of the Blind is in Race street, near Schuylkill Third. The main edifice contains school, exhibition and lodging rooms: there is also a commodious brick building erected for work shops and the pursuit of such trades as are carried on by the pupils. In this excellent institution about sixty blind children are instructed, not only in reading, writing, arithmetic, geography and music; but they are also taught to manufacture a great variety of useful and ornamental articles, in which they are scarcely excelled by the clear-sighted.

A great number of other charitable institutions have been established for various purposes, among which may be mentioned the Orphans' asylum; the Asylum for indigent widows and single women; Wills' hospital for the lame and blind; Preston retreat; Magdalen asylum; Foster home; Shelter for coloured orphans; Institute for coloured youth; St. John's and St. Joseph's orphan asylums; Christ church hospital; Friends' almshouse; Friends' lunatic asylum near Frankford; Philadelphia, Northern and Southern dispensaries for the supply of medicines to the poor; House of industry; Union benevolent association, and a number of societies for the relief and employment of the poor; Fuel savings society; Seaman's friend society; Humane society; Society for alleviating the miseries of

public prisons, &c. &c. There are also societies for the relief of poor and distressed emigrants from various foreign countries; and a great number of Mutual relief societies, and other associations for benevolent purposes. Temperance associations are numerous, and their beneficial influence upon the moral habits of the community is apparent in the general improvement of society, and the decrease in the number of tippling houses and low taverns by which the city and suburbs were formerly infested.

Religious societies.—For the promotion of religion and morality, most of the existing religious denominations have in connexion with them Sunday schools and missionary, Bible and tract societies, which, with the blessing of Providence, are likely to exert a very beneficial influence on the rising generation. Among the most efficient operators in this good cause may be mentioned the American Sunday School Union, an association established for the purpose of publishing books of a religious character, for gratuitous distribution to Sunday schools, or for sale at low prices.

Places of worship are numerous, many of them being edifices of considerable architectural beauty, with neat and commodious interior arrangements. Of these, together with the number of Sunday schools and scholars in the city of Philadelphia and its suburbs, we append a tabular statement, which, though compiled with care, may still not be found strictly correct.

<i>Religious denominations.</i>	<i>Places of worship.</i>	<i>Sunday schools.</i>	<i>Scholars.</i>
Presbyterian	23	30	8,500
do. (African)	3	3	250
Reformed Presbyterian	3	2	320
Associate do.	2	2	140
Methodist Episcopal	19	33	7,660
do. do. (African)	4	4	600
do. Protestant	5	5	830
Protestant Episcopal	22	26	5,600
do. do. (African)	1	2	150
Baptist	14	19	4,150
do. (African)	4	3	200
Lutheran	6	7	1,650
German Reformed	3	2	650
Dutch Reformed	2	5	850
Independent	1	1	470
Moravian	1	1	200
Friends (orthodox)	4		
do.	3		
Universalist	3	4	500
Unitarian	1	1	100
Swedenborgian	1	1	
Mennonist	1		
Disciples of Christ	1		
Bible Christians	1		
Protestant (mariners' chapel)	1	1	350
Roman Catholic	11	10	5,000
Jews	3	1	150
Mormon	1		
Total	144	163	38,320

Education.—The public schools of the city and county of Philadelphia are not governed by the provisions of the act of 1836, establishing a system of common school education for the State; having been by a law passed in 1818, erected into a separate district for this purpose, and denominated the First School district of Pennsylvania. This district is divided into sections numbered from one to eleven; of which the City forms the first; Northern

Liberties the second; Southwark the third; Spring Garden the fourth; Oxford, Lower Dublin, Moreland and Byberry the fifth; Bristol, Germantown and Roxborough the sixth; West Philadelphia, Blockley and Kingsessing the seventh; Passyunk the eighth; Moyamensing the ninth; Kensington the tenth; North and South Penn township and the unincorporated Northern Liberties the eleventh. A board of directors is elected in each district, whose number is regulated by the amount of duties to be performed. Those in the city and incorporated districts are elected by the councils or commissioners of the districts, and in the townships and boroughs by the people at the spring elections; one-third of the whole number being elected annually. To these boards of directors are confided the organization and direction of the schools, the election of teachers, and the general superintendence of the local concerns of public education in the several sections.

For the general control and regulation of school concerns in the whole district, a higher board is chosen by and from the directors, termed the "Controllers of the Public Schools," twenty-one in number, composed of representatives from the several sectional boards of directors; the first section choosing seven; the second, three; the third, two; the fourth, two; the fifth and sixth, one each; the seventh and eighth jointly, one; the ninth, one; the tenth, two; and the eleventh, one. The controllers determine the amount of money to be drawn annually from the county treasury to defray the expenses of the schools; erect and furnish the buildings to be used as school houses; fix the number of teachers and their salaries, and furnish the books and other supplies. They control the expenses of the several sections, and make the appropriations required for each. They have the immediate direction of the Model school, and of the High school, and make occasional visits of inspection to the schools of all the sections.

According to the report of the Controllers for 1842, there were in the incorporated parts of the district, 62 primary schools with 9342 pupils; 11 secondary schools with 2597 pupils; 19 grammar schools with 8445 pupils; and one high school with 307 pupils. In the outer sections there were 92 schools with 6347 pupils: total amount of schools 185, and of pupils 27,808. The number of teachers employed was 339; of whom 91 were males and 248 females; and their aggregate salaries \$110,250; being an average annual compensation to each of \$325. The average cost of tuition for each scholar was \$3.97, and the total annual expense for each, not including interest on the cost of school houses and furniture, \$5.16. The average annual cost of each pupil, from the establishment of the present system to 1841, a period of twenty-two years, including interest on school houses and lots at 5 per cent., has been \$5.07; about one-fourth of the amount which it would have cost the community to educate the same number of children in private schools.

Twenty-four substantial school houses have been erected, generally three stories high, and of sufficient capacity to accommodate from 600 to 1000 scholars each. The total value of these buildings, with the lots on which they stand, is estimated at \$540,000, and the value of school furniture, libraries, &c., at from thirty to forty thousand dollars. The amount drawn from the county treasury in 1842, for the support of the public schools, was \$180,000; and the appropriation received from the State for the same year, \$57,764.

The flourishing condition of the schools in this district, the progressive improvement which has been made in their organization, the improved method of teaching, and the extended and liberal course of instruction pursued, are such as must afford the most lively satisfaction to the friends of popular education, and bid fair to realise their most sanguine anticipations with regard to the beneficial effects of the system. It is believed that the course of instruction, as developed in the primary, secondary, grammar and high schools, constitutes one of the most perfect systems of common school education that has ever been reduced to practice; and one which, while it recognises no distinction of rank or of wealth, affords to all the means of

acquiring a sound, thorough, and practically useful education. Beginning in the primary schools, where the rudiments are taught, the pupil, when duly prepared, is advanced to the secondary and grammar schools, where receiving the advantages of a good English education, he may qualify himself for admission into the high school, and thus be prepared for any business, profession or occupation to which his inclination and talent may direct him.

The course of study in the High school is divided into the following departments: I. English Belles-Lettres, with History and Geography: II. The French and Spanish languages: III. The Latin and Greek languages: IV. Moral, Mental and Political science: V. Mathematics and theoretical Mechanics: VI. Mathematics and Astronomy: VII. Mechanics and Natural Philosophy: VIII. Chemistry: IX. Natural History, including Anatomy and Physiology: X. Drawing and Writing. These studies are grouped into three courses, one of which the parent of a pupil selects for his son. The first is the English course of two years, intended for those whose services will probably be required by their parents at the end of that period; the second is the principal course of four years, intended as a preparation for pursuits connected with trade, commerce, manufactures, and the mechanic arts; and the third is the classical course of four years, intended for those who are to become teachers, to go to college after passing through the high school, or, in general, whose parents may prefer this mode of mental training.

A pupil must be twelve years of age, and must have attended one of the grammar schools at least one year before he can be a candidate for admission into the high school; and most of those who have been admitted have passed through a regular course in the primary, secondary and grammar schools. The average time passed in the other public schools by the candidates admitted to the high school in and since 1840, is within a small fraction of two years. The examinations for admission are semi-annual, in January and July; the names of the candidates being unknown to the examining professors, and every opportunity for partiality or favoritism being rigidly excluded, while the qualifications of the pupil are most thoroughly tested. One of the great advantages resulting from the high school is its reaction upon the grammar schools, the teachers of which feel that the character of their respective schools is in some measure involved in the success or rejection of the candidates sent from them. Every exertion is therefore made to prepare them previously, and from the time of his reception into the grammar school the pupil is trained with a view to his being found, at the proper time, duly qualified to pass the requisite examination for admission into the high school.

The total expenses of the high school for 1842 were, for tuition \$12,175; furniture \$125; supplies \$1,927; and real estate \$1,891. Including the last item, which was for a permanent improvement and cannot again occur, the average cost for each pupil is about \$47; while in the schools of Boston the cost of instruction for each pupil in the same branches is \$61. Of a class of 27 pupils in the high school, graduating in July 1842, seven were intended for mechanical occupations, eight for commerce, eleven as teachers, and one for a profession.

It is in contemplation to organize a branch of the high school for the instruction of females, and a school for female teachers; but as yet no definitive determination has been adopted in relation to the subject.

In addition to the opportunities afforded for instruction by the public schools, there are in Philadelphia numerous academies, seminaries and private schools, in which are taught not only the higher branches of an English education, but the ancient and modern languages, mathematics, and most of the arts, sciences and accomplishments which form part of a liberal and finished education.

By the will of the late Stephen Girard, two millions of dollars were bequeathed for the purpose of erecting a permanent college with suitable out-

buildings, sufficiently spacious for the residence and accommodation of at least three hundred scholars, the requisite teachers, &c. This college was intended by the founder for the reception of "poor white male orphan children," who by the terms of the will are to be instructed in certain branches of a sound practical education, and fed, clothed and lodged in a plain and decent manner. On arriving at an age between fourteen and eighteen years, they are to be bound out to suitable occupations, such as agriculture, navigation, arts, mechanical trades and manufactures, as their respective capacities, acquirements and inclinations may render expedient and proper. The buildings for this institution not being completed, no scholars have yet been received.

The University of Pennsylvania, established in 1751 as an academy and charitable school, was chartered and endowed in 1753, erected into a college in 1755, and into a university in 1779. This institution comprises three departments,—the academical, the collegiate, and the medical. In the collegiate department the usual college course of four years' instruction is given in such branches of study as are common in the principal universities of the United States, and the usual degrees conferred. The medical school connected with this university is the most ancient and flourishing in the country, the number of students being generally from four to five hundred. There is an extensive anatomical museum and cabinet of natural history, excellent chemical and philosophical apparatus, with a library of 2000 volumes attached to the university. Three charity schools, two male and one female, are supported by the funds of the institution. The university buildings are in Ninth street, between Market and Chestnut, and consist of two handsome edifices, each 85 feet front by 112 deep, surrounded by an open area which is separated from the street by a neat and substantial iron railing.

Jefferson Medical College, established in 1825, and afterwards chartered by the legislature, is a flourishing institution, having generally about two hundred students. Its hall in Tenth street, between Chestnut and Walnut, has ample accommodations for lecturing and demonstrating in medicine, surgery and anatomy; with a museum of specimens and preparations in the various branches of science connected with medical studies.

Pennsylvania Medical College is a branch of the Pennsylvania College at Gettysburg, instituted in 1839, with power to confer degrees. It is located in Filbert street above Twelfth, and considering its recent establishment and the opportunities afforded to medical students by other institutions, its lectures have been well attended.

The Philadelphia Medical Institute, the College of Pharmacy, the Medical Society, and the College of Physicians, are all respectable and useful institutions for the promotion of medical science.

Literature, science, and the arts.—There are numerous institutions and associations for the promotion of literature, science and the arts, the efficiency of whose labours is beneficially felt and justly appreciated.

The Philadelphia library, founded in 1731 by Dr. Franklin, contains upwards of 30,000 volumes, embracing works on almost every branch of general knowledge. To this has been added the Loganian library, formerly belonging to the late Dr. Logan, composed of about 11,000 volumes of rare and valuable books, chiefly classical. These collections are kept in different rooms of the same building, and are in fact one library, which at certain hours is free to every respectable person.

The Athenæum, incorporated in 1815, contains, besides the current periodical journals, a library consisting of several thousand volumes. The rooms are open every day except Sunday, and strangers are admitted gratuitously for one month, on introduction by a member.

The Mercantile library was established in 1822, for the purpose of diffusing mercantile knowledge, and has a collection of about eight thousand volumes, relating to subjects of commerce and its kindred pursuits. Popular

lectures are delivered under the auspices of this institution, on commerce, commercial law, the arts, sciences and general literature.

The Apprentices' library was instituted in 1819, by voluntary contributions from citizens, and contains about 14,000 volumes, chiefly adapted to the taste and capacity of young persons, for whose use it was established. It is open for all boys and girls who give a sufficient guaranty for the careful use and proper return of the books, and about 1300 young people avail themselves of its benefits.

The American Philosophical Society is the oldest association of the kind in this country, having been formed by the union of two associations for the advancement of useful knowledge, both founded principally by Dr. Franklin, one in 1728, and the other in 1743. This society has always been held in high consideration on account of the interest of its proceedings, the respectability of its character for learning and science, and the number of eminent men, both in this country and in Europe, whose names are found on the list of its members. Its presidents have been Benjamin Franklin, David Rittenhouse, Thomas Jefferson, Caspar Wistar, Robert Patterson, William Tilghman, and Peter Stephen Duponceau. Its library consists of near 15,000 volumes of valuable and rare books, many of which have been presented by foreign governments and learned societies. In addition to the library there is a collection of minerals and fossils, ancient relics, and many other curious and interesting objects. Strangers are admitted to the hall when introduced by a member. The society issues, for the use of its members, monthly bulletins of its transactions, which are afterwards embodied and published in a larger and more durable form.

The Franklin Institute, incorporated in 1824, has for its object "the promotion and encouragement of manufactures and the mechanic and useful arts, by the establishment of popular lectures on the sciences connected with them; by the formation of a cabinet of models and minerals, and a library; by offering premiums on all subjects deemed worthy of encouragement; by examining all new inventions submitted to them, and by such other means as they may deem expedient." The number of members is upwards of 2000, each of whom pays an annual contribution of three dollars, or by the payment of twenty-five dollars becomes a life member. Regular courses of lectures are delivered upon chemistry, mechanics, natural philosophy, arts and manufactures and other practical and scientific subjects. Conversation meetings are held on the third Thursday of each month, at which specimens of new inventions and other objects of interest are exhibited, explained and discussed. Attached to the institute is a reading room and library, containing most of the periodical publications of the day, together with about 3000 volumes of books in the various departments of science and literature. There are also extensive and interesting cabinets of models, minerals, geological specimens, and specimens illustrative of the arts and manufactures. Exhibitions of the products of American industry are held annually under the direction of the Institute, which present a pleasing and instructive view of the skill and proficiency attained by our manufacturers and mechanics in a vast variety of branches, and never fail to gratify and instruct immense crowds of visitors. A Journal is published monthly by the Institute, containing an account of recent inventions, improvements and discoveries in science and the arts, with much other useful matter on subjects connected with the objects of the institution.

The Academy of Natural Sciences occupies a new and spacious building recently erected for its use in Broad street, between Chestnut and Walnut. It has a library of about 9000 volumes of valuable books, and an extensive collection of specimens in the various departments of natural science. Its transactions are published under the title of the Journal of the Academy of Natural Sciences. The hall is open to visitors on the afternoon of every Saturday.

The Pennsylvania Academy of the Fine Arts, in Chestnut street above Tenth, was founded in 1805, and contains an extensive collection of paint-

ings, statues and other works of art, always open to students and exhibited to visitors.

The Artists' Fund Society, though it has been in existence but a few years, has been conducted with so much zeal and industry as to have assumed a prominent place among institutions of this kind. Its hall is in Chestnut street, in front of the Academy of Fine Arts, and is designed for the exhibition of the productions of its members and others, with a view to provide a fund for the support of decayed artists. It forms an attractive place of resort for artists and amateurs, and affords a tolerably correct idea of the state of the fine arts among us.

The Philadelphia Museum, founded more than half a century since by the late C. W. Peale, now an incorporated institution, was formerly exhibited in the upper rooms of the State house, then removed to the Arcade, and finally, in 1839, to the building which it now occupies at the corner of Ninth and George streets. This spacious edifice is 238 feet in length, 70 in breadth, and two stories high. The upper story contains the museum, and having been constructed expressly for its reception, is admirably arranged for the favourable exhibition of the extensive suite of specimens and objects of curiosity which it contains. The saloon of the first floor, 163 feet in length and 70 in width, was formerly occupied by the Chinese Museum; but since the removal of that collection to Europe, this spacious hall is devoted to temporary exhibitions, public meetings, &c.

Besides those which we have mentioned, there are many other institutions and associations for literary and scientific purposes, of which our limits forbid a particular account. Most of them have their libraries and reading rooms, and in many of them lectures are delivered on subjects connected with the objects of the association. The combined influence of these institutions is apparent upon the general character of the community, by promoting the interests of learning, science and morality, and cultivating a taste for mental improvement and the pure pleasures arising from literary and scientific pursuits. Many of our young men, whose evenings would probably be otherwise spent in places of amusement and dissipation, find a nobler pleasure and a higher enjoyment in passing their leisure hours in the halls or lecture rooms of some of our numerous institutions for mental culture and intellectual gratification.

Such, imperfectly as we have sketched it, is Philadelphia, than which perhaps no city in the world possesses more that contributes physically to the comforts of life; while for the merchant, the manufacturer, the mechanic, the artist, the man of letters or of science, the philanthropist or the Christian, there is presented a field of action in which his labours will be justly appreciated, if not in all cases suitably rewarded. The rapid increase and extension of the city within the last twenty or thirty years would seem to indicate that the manufactures, trade and commerce of Philadelphia will keep pace with the general progress of improvement, and with the developement of the agricultural and mineral resources of the State; promising in time to realize the prediction said to have been uttered by Stephen Girard, that "Germantown and Frankford will be absorbed by the city."

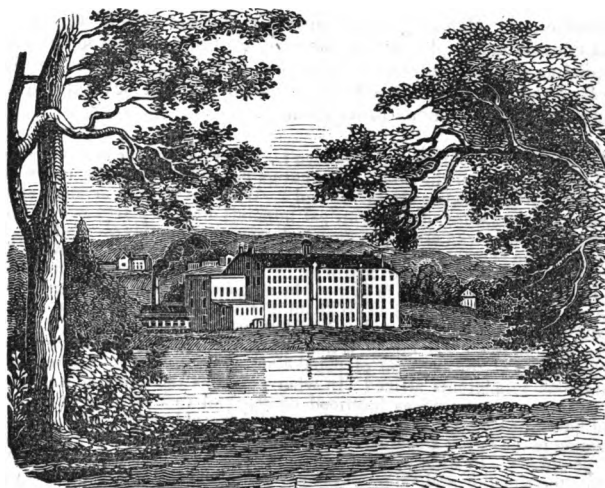
Besides the city and its suburbs, Philadelphia county contains numerous other flourishing towns and villages, of which we shall briefly notice some of the most considerable and important.

Frankford, an incorporated borough in Oxford township, five miles north-east from the city, contains upwards of 2000 inhabitants, and is a thriving and busy place, being situated in the midst

of a populous, fertile and well cultivated country, and having in its vicinity a number of extensive manufacturing establishments.

Germantown, six miles north-north-west from Philadelphia, is an ancient place, having been founded in 1684, and incorporated as a borough in 1689. The town consists chiefly of but one street, or rather a close line of buildings extending on each side of the turnpike for a distance of three or four miles. It contains a number of churches, a bank, several academies, and has, together with the township, a population of 5482. Some important branches of manufacturing industry are carried on in this place and its immediate neighbourhood. It has communication with the city almost every hour in the day, by means of rail road and stages. This place is celebrated as having been the theatre of a sanguinary contest during the revolutionary war (Oct. 4, 1777) between detachments of the British and American armies, in which considerable loss was suffered on both sides.

Manayunk is on the east side of Schuylkill, about eight miles above the city. This flourishing manufacturing town has sprung up from the creation of the water power afforded by the dam and improvements of the Schuylkill navigation. In 1819 the place where the town now stands was mostly covered with trees and bushes: it now contains upwards of five hundred dwellings, and twenty-five or thirty flour and paper mills, cotton factories, and



View near Manayunk.

other extensive and valuable manufacturing establishments.—The Schuylkill canal and Norristown rail road both pass through the town, affording constant intercourse with the city: it is also connected by a Macadamized road with the Ridge turnpike.

Here are two bridges across the Schuylkill, one of which is at Flat-rock, a little above the town.

Holmesburg is on the Bristol turnpike, at Pennypack creek, about ten miles from the city; having several mills and factories in the village and its immediate neighbourhood. The Philadelphia and Trenton rail road passes near this place.

Bridesburg, at the mouth of Frankford creek, on the Delaware, five miles above the city, is a new and flourishing village, near which is the United States' arsenal, consisting of extensive stone buildings, constructed for the preservation of arms and military stores, together with work shops, magazines, &c.

Bustleton, on Pennypack creek, eleven miles north-east from the city, is a pleasant village, containing upwards of 300 inhabitants, having an excellent turnpike road passing through it. Three miles further, on the same road, is Smithfield or *Somerton*, near the north-eastern limit of the county.

Sunville, commonly called Rising-sun, is at the junction of the Germantown and old York roads, three miles from the city. *Nicetown*, *Branchtown* and *Milestown* are villages further northward; the first on the Germantown, and the others on the York road.

West Philadelphia is in Blockley township, on the west side of Schuylkill, opposite the city at Market street, containing about 150 dwellings and stores, with several manufacturing establishments. *Hamilton* and *Mantua* villages are on the same side of the river, and contain many pleasant residences, a number of which are occupied as summer retreats by citizens. *Haddington* is four miles west of the city, and has a spacious academy and several manufacturing establishments in its vicinity.

How is Philadelphia county bounded? Describe the face of the country and the character of the soil. To what geological class do the rocks belong, and what varieties are mentioned? Where is steatite or soap stone found? Name some of the principal minerals and the places where they occur. What creeks are mentioned as flowing through this county? What is said of the climate, and of the extremes of temperature? How is the city of Philadelphia situated, and what is its extent? Describe the limits of the city proper. What is said of the adjoining districts? Who owned the soil before the arrival of William Penn? Where did Penn hold a treaty with the Indians, and what is said of the famous elm tree? In what year was the town laid out? Where were the first houses mostly built? What is said of the increase of population, and from what countries did numerous immigrants arrive? In what year was the State-house built? What prophetic motto was inscribed on the bell cast for its first steeple, and how was it verified? Mention some of the oldest buildings now remaining in the city. Describe the general plan of the city and the direction of the streets. In what manner are the streets paved and drained? Describe the situation and extent of the several public squares. What is said of the general style of architecture and of the materials used in building? Mention some of the most conspicuous marble edifices in Philadelphia. Give a general description of the Girard college. Of the United States' bank. Bank of Pennsylvania. Girard bank. Merchants' exchange.

How was the city supplied with water before the erection of the Fairmount works? What is the capacity of the reservoirs at Fairmount, and their height above the river? Describe the manner in which water is

raised into them, and conducted from them into the city. What is the average quantity used daily throughout the year? What is the extent of iron water pipes laid in the city and districts? What has been the total cost of the water works, and what is the expense of the present system compared with the former? Give a general description of the gas works. How is gas conducted from the works throughout the city and distributed to the burners? What is said respecting the supply of provisions for the city? How supplied with fuel? What is said of the resources, trade, &c. of Philadelphia? Mention some of the circumstances which have contributed to its prosperity. What is the character of manufactures and mechanic arts in Philadelphia? What can you say of her manufactures of iron? Of steam engines and machinery? Mention some of the other principal branches of manufacturing industry. Describe the United States' navy yard. The United States' mint. How many banks are in operation, and what is the amount of their capital? Insurance companies? What number of fire-engine and hose companies? In what manner is the mayor of the city elected, and what powers are exercised by him? How are the councils elected, and what are their duties? Aldermen? In what manner are the adjoining incorporated districts governed? How are the county officers elected? How are the expenses of the several corporations of city and districts defrayed? In what manner is the general county tax levied?

Give a general description of the Eastern penitentiary. Of the cells and interior arrangements generally. Of the treatment of convicts. Describe the County prison. The Debtors' prison. House of Refuge. Philadelphia Almshouse. What is said of the extent and interior arrangement of this building? What is the average number of paupers maintained in the establishment? How is the institution governed? Describe the Pennsylvania hospital. Insane asylum. United States' Marine hospital. Institution for the Deaf and Dumb. Institution for the instruction of the Blind. What other charitable institutions can you mention? What is said of Temperance associations? How many houses for public worship are there in the city and suburbs? The number of Sunday schools and scholars?

In what manner is the public school district composed of the city and county divided into sections? How are the school directors elected, and what are their duties? How is the board of controllers chosen, and what duties do they perform? What is the total number of schools, of scholars, and of teachers employed? What is said of the system of instruction, as developed in the primary, secondary, grammar and high schools? Describe the courses of study in the high school. What are the conditions of admittance for a pupil? What is said of academies, seminaries and private schools? What were the objects of the Girard college as intended by its founder? Give some account of the University of Pennsylvania, and of the medical school connected with it. Of Jefferson Medical college. Pennsylvania Medical college. What can you say of the Philadelphia library? Of the Athenæum? Mercantile library? Apprentices' library? American Philosophical society? Franklin Institute? Academy of Natural Science? Academy of the Fine Arts? Artists' Fund society? Philadelphia Museum? What is said of literary and scientific associations, and of their general influence upon the character of the community?

Where is Frankford situated, and what is said of it? Germantown? Manayunk? Holmesburg? Bridesburg? Bustleton and Somerton? Sunville? Nicetown, Branchtown, and Milestown? West Philadelphia? What other villages are named?

45. PIKE COUNTY.

Pike county lies north of Monroe, having the river Delaware on the east and north-east, and the county of Wayne on the west and north-west. Population 3,832.

The face of the country is uneven and hilly rather than mountainous, the most elevated point being called the High Knob, which is a continuation of the Pokono ridge, prolonged north-eastward from Monroe county. Along the Delaware below Milford is a narrow fertile valley, between the river and a range of slate hills which run nearly parallel with it.

These hills are the lower portion of the olive slate formation which spreads out widely over the south-eastern part of the county, containing much greenish gray sandstone in thin and nearly horizontal strata. North west of this series of rocks are the red and gray sandstones and shales of the next formation (IX) which extends over most of the remaining part of the county.

The soil is generally thin and stony: a large portion of the county is a neglected wilderness, overgrown with scrub oak and other small trees and shrubs; in the low grounds near the streams the soil is better, and larger trees of oak, hemlock and pine are found. White pine is becoming scarce, having been, like much of the other valuable timber, cut off in former years by the lumbermen, wherever found within reach of a stream large enough to float it away.

The *Delaware* river flows along the north-eastern side of this county, separating it from the state of New York, until it reaches the New Jersey line at Carpenter's point, 7 miles above Milford, where it turns to the south-west and thence divides Pike county from New Jersey. *Lackawaxen* is a large stream emptying into the Delaware in the north; a branch of which, called *Wallenpaupack*, running northward, forms most of the western boundary. On this stream, not far from its mouth, are several perpendicular falls of considerable height, affording a site for the employment of water power which in a fertile and accessible country might be rendered of immense value. Some improvements have been erected here, but the business undertaken does not seem to have been very prosperous.

Shohola creek falls into the Delaware below the Lackawaxen, and has a number of saw mills erected on it. *Sawkill* and *Ramyskill* empty into the Delaware below Milford; *Bushkill* is a large creek in the southern part of the county, being its boundary line for some distance from the Delaware. Most of these streams issue from small lakes and ponds in the wild uninhabited interior of the county, and in their descent from the higher land to the Delaware are frequently precipitated over perpendicular ledges and cliffs of rock, forming a number of cascades of singular wildness and beauty. These, from the nature of the country, offer little inducement to the calculating utilitarian spirit of profit, which seizes upon every waterfall and converts it into a working power for sawing, grinding or manufacturing. Here, where there is

little to saw, and nothing to grind or manufacture, the wild and romantic features of nature remain in their primitive state, unchanged by the restless spirit of gain, which threatens in time to convert Niagara itself into an enormous mill-dam, and to drown the roar of that mighty cataract in the noise of wheels and the rattle of machinery driven by its power.

Milford is the seat of justice, situated on the Delaware about 60 miles above Easton. It is not a place of much importance, and but little business is transacted here except the public affairs of the county. The public buildings are not extensive, and the private dwellings are mostly constructed of wood. There is a handsome bridge across the Delaware near the town. The Milford and Owego turnpike passes westward from this place, and a line of stages from New York, by way of Newark in New Jersey, runs on this route to Owego and other places in the west.

The Delaware and Hudson canal passes up the Lackawaxen through the northern part of this county, and continues to Honesdale in Wayne county, where it communicates by rail road with the coal mines at Carbondale, on the Lackawana.

The agricultural productions are chiefly confined to the valleys in the eastern portion, near the Delaware. In those parts of the county where the timber is suitable, considerable quantities of lumber are produced, which is rafted down the Delaware at high water.

Assessed valuation of property in 1842, subject to county taxation, \$831,306: county tax \$2,493: State tax \$899.

Pike county contains 8 school districts of which 7 have accepted the common school law. The reported number of schools in operation is 14, which are open about 5 months in the year. There are two academies in the county,—one at Milford and the other at Dingman's ferry.

How is Pike county bounded? Describe the general face of the country. What are the principal rock formations? What is said of the soil, and timber? What is the course of the river Delaware? What large stream empties into it? What is said of the Wallenpaupack, and the falls upon it? Mention the other principal streams and their situation. What is said of the various waterfalls? How is Milford situated, and what is said of it? What turnpike crosses the county? Describe the course of the Delaware and Hudson canal. What is said of agricultural produce, lumber, &c.? Of common schools and academies?

46. POTTER COUNTY.

Potter county is bounded north by the state of New York, east by Tioga, south by Clinton, and west by McKean. According to the census of 1840 it contained 3,371 inhabitants.

This is one of the most elevated counties of Pennsylvania, consisting of a high though uneven table land, on which rise streams flowing northward to the Genesee, eastward to the North branch of Susquehanna, southward to the West branch, and westward to the Allegheny. Springs, therefore, rising within a few miles of one another, discharge their waters into the ocean through the

distant outlets of the Gulf of St. Lawrence, the Chesapeake bay, and the Gulf of Mexico. The principal streams are *Pine* creek, *Kettle* creek, and *Sinnemahoning*, branches of the Susquehanna; and the heads of the *Allegheny* and *Genesee* rivers.

The rocks generally belong to the geological formations next in order below the bituminous coal measures; though it is possible that the highest hills towards the southern part of the county may contain elevated patches of some of the lower coal beds. The wilderness nature of the country renders exploration difficult, and a minute developement of its geological and mineral resources must be left to a future period, until a more improved communication with this region shall give value to its contents.

Thick forests of pine, hemlock, beech, sugar maple and other timber extend over most of the county; the settlements are few and remotely scattered, the inhabitants depending chiefly upon lumber and other productions of the forest for their subsistence. Maple sugar is made to a considerable amount. Agriculture is, however, beginning to receive more attention as the settlements increase.

Coudersport is the seat of justice, situated in the western part of the county, on the Allegheny river near its source. It contains a handsome stone court-house, and other public buildings. A turnpike road leads from this place to Jersey shore on the West branch of Susquehanna, a distance of 67 miles, through a wilderness; there being, until very recently, but one house on the road between the two places. An east and west road, crossing the northern tier of counties, also pass through Coudersport.

The value of property assessed in 1842, subject to taxation for county purposes, was \$603,547: county tax \$4,585: State tax \$615.

In this, as in the other northern counties, the common school system is generally adopted. Potter contains 16 school districts of which 14 have accepted the law and maintain 43 schools which are open for instruction 5 months in the year.

Inhabitants mostly from the Eastern states and from other parts of Pennsylvania. The streams abound with trout; and deer, bears and some elk are found in the woods.

How is Potter county bounded? Describe the face of the country, and the different directions of the waters which flow from it. What are the principal streams? What is said of the geological formations? Of the forests of timber, and general nature of the country? Of the productions, and the attention paid to agriculture? What is the seat of justice, and where situated? What turnpike road is named? What is said of education, and common schools? From what places are the inhabitants chiefly derived? What species of game abound?

47. SCHUYLKILL COUNTY.

Schuykill county is bounded north by Northumberland and Columbia, north-east by Luzerne, east by Carbon, south by Lehigh and Berks, and west by Lebanon and Dauphin. Population, 29,053.

The face of the country is mostly rough and mountainous: some

of the valleys are cultivated, but only a small portion of the county is adapted to agricultural purposes.

The climate is healthy, though subject to considerable extremes of heat and cold. According to the meteorological observations made at Port Carbon, the mercury in January, 1841, fell to 20° below zero, and in July of the same year rose to 100°.

On the south, the Blue or Kittatiny mountain separates Schuylkill from Berks and Lehigh; between this and the Second mountain is a hilly and uneven country, broken by numerous irregular ridges, sometimes of considerable height, but inferior in elevation to the principal mountain ranges between which they are situated. North of the Second mountain is Sharp mountain, the southern limit of the anthracite coal field, and between this and Broad mountain is the hilly area of the southern coal basin. The Broad mountain is a high irregular table land, terminating on the west in several points or spurs which jut out into the valley between it and the Mahontongo mountain. The latter extends eastward from the Susquehanna, and terminates at its junction with the Line mountain, near the north-western boundary of the county. In the north-east are Bear ridge, Locust and Green mountains.

Along the north side of the Blue mountain is a belt of red shale (V,) succeeded by a thin limestone formation (VI) not always discoverable, next to which, in the first ridge north of the mountain, is a yellowish coarse sandstone (VII) containing cavities showing the impressions of fossil shells which have once been imbedded in it. Extending from the northern base of this ridge to the Second mountain are the olive slates (VIII) and the red sandstones and shales (IX) of the next succeeding formations. In the Second mountain we have the compact coarse gray sandstone (X) next in order, and the same formation is seen in Mahontongo mountain, dipping southward beneath the red shale of Lykens' valley. In the narrow valley between Second and Sharp mountains is the red shale (XI) which encircles all the anthracite coal basins, and which is also seen in Williams, Lykens', Mahanoy and Locust valleys; as well as in the small valleys separating the terminating spurs of the various coal basins. The conglomerate rock, composed of cemented pebbles and sand, which lies immediately below the coal measures, occurs in the Sharp mountain, on the wide and elevated plateau of the Broad mountain where not covered by the coal series; also in Locust and Green mountains, and in the minor ridges which divide, by their axes of elevation, the coal fields into separate troughs or basins. A minute description of the various smaller divisions of the great coal fields is not necessary on the present occasion, and a mere general notice is all that our limits will allow.

The great southern coal field extends westward from the Mauch Chunk mines into Schuylkill county, and in the neighbourhood of Tuscarora is divided by an anticlinal axis into two basins,—that of Mine hill on the north, which extends westward along the Broad mountain, and the Pottsville basin on the south, which is prolonged westward by the Swatara, beyond which it is separated by the red shale of Williams' valley into two branches; the northern one extending into Bear valley between Wiconisco creek and Lykens' valley, and the southern continuing along the north side of the Sharp or Third mountain, called the Stony creek coal basin.

On the elevated table land of the Broad mountain are several shallow coal basins, some of which have been so much denuded as to contain only the very lower strata of the coal measures, and consequently cannot prove very productive. On the north are several coal troughs connected with the Beaver meadow and Mahanoy basins, containing a number of productive

beds which may at a future day become important, when means shall be afforded for transporting the coal of this region to a market.

A detailed account of the innumerable coal mines within this county, and a particular description of the various beds which are worked, would far exceed our limits. In the east there are extensive mines in the vicinity of Tamaqua; from which the coal is sent on a rail road down the Little Schuylkill to Port Clinton, where it is transferred to boats on the Schuylkill navigation. Along the Schuylkill valley, from Tuscarora westward towards Pottsville, are numerous mines; the product of which is sent by a rail road down the valley to the Schuylkill navigation at Port Carbon. Pottsville is the great central point of the coal operations in this district; and in its vicinity, in the region extending from the Sharp to the Broad mountain, are many extensive mines on Norwegian, Mill creek and other streams; from which branch rail roads lead to the navigation or to the Pottsville and Reading rail road. Further westward, on the West Branch and its tributaries, a vast amount of coal is also mined; which is sent by the Mine hill and Schuylkill Haven railroad to the river at Schuylkill Haven. Beyond this, on the head waters of the Swatara, many fine coal beds are worked; from which the coal is sent on rail roads to Pine Grove, and thence down the Swatara by the navigation of the Union Canal Company. In the gaps by which the Swatara, Lorberry and other streams pass through the mountain ridges, a great number of coal seams are exposed in situations favourable for mining advantageously. The productive capacity and inexhaustible character of the southern coal field will be perceived by the following statement, from a description of the Swatara coal region, of the number of beds which had then been discovered on the waters of that stream. Five of these, in the Sharp mountain, are of the thickness respectively of 3, 4, 5, 6 and 8 feet: in Red mountain are seven, measuring 4, 6, 8, 12, 14, 20, and 30 feet: in Coal mountain three, of 6, 14 and 18 feet: in Little Lick mountain five, of 4, 6, 8, 14 and 22: in Big Lick six, namely, one of 4, three of 5, one of 9, and another of 14 feet: in Thick mountain five, of 5, 6, 7, 18 and 22 feet. The Stony creek and Wiconisco or Bear valley branches of this coal basin both extend westward into Dauphin county; but in the latter, at Klinger's or Raush gap, in Schuylkill county, where Raush creek passes through the mountain from Bear valley northward into Lykens' valley, nine seams of coal have been opened of from 4 to 24 feet thick, and a number of others are known to exist which have not yet been explored. In the region north of the Broad mountain but little has yet been done towards the exploration and development of the numerous coal beds which are known to exist about the head waters of the Mahanoy, except some openings in the vicinity of Girardville, on the Danville and Pottsville rail road, which afford sufficient proof of the highly productive and valuable character of this portion of the coal field.

The middle and eastern part of the county is principally watered by the *Schuylkill* river and its various branches. The *Little Schuylkill* rises in the east and flows southward, uniting with the main stream at Port Clinton, a little above the Blue mountain. The *West Branch* empties near Schuylkill Haven, four miles below Pottsville. In the south-west is the *Swatara*, running south-westward towards the Susquehanna; and in the north-west the *Mahontongo*, and its branches *Pine* and *Deep* creeks, having a western course to the same river. In the north is *Mahanoy* creek, and its tributary *Shenandoah*, flowing westward; and in the north-east, the head streams of *Catawissa* creek, running north-westward to the north branch of Susquehanna.

Orwigsburg, the seat of justice, is situated on the turnpike leading from Reading through Pottsville to Sunbury; 26 miles from

Reading, and 8 south-east of Pottsville. It contains a population of nearly 800, and has a court house, a prison, a building for the public offices, and three churches of different denominations.

Pottsville is the principal town in the county, containing 4,345 inhabitants within the borough limits and a considerable population in the adjacent suburbs. It is situated on the Schuylkill, 34 miles above Reading and 86 from Philadelphia, in a favourable location for business, being in the midst of the mining district and having a communication with Philadelphia both by rail road and navigation. Large quantities of coal are shipped here, not only from the mines in the immediate vicinity of the town; but also that which is brought on branch rail roads from different points in the surrounding region. It is also the seat of considerable other business; containing upwards of thirty stores, and a number of manufacturing establishments of various kinds. The public buildings are a town hall, a borough prison or lock-up house, an academy, a bank, and a number of churches. This place is remarkable for the rapidity of its growth, springing up in the midst of a wild mountainous region, and becoming in a few years a busy and populous town, important not only for its size and population, but for the enterprise and active industry of its inhabitants, and the extent of its business operations.

Port Carbon, on the Schuylkill above Pottsville, *Minersville* on the West branch, *Schuylkill Haven* and *Port Clinton* below Pottsville, and *Tamaqua* on the Little Schuylkill, are places of some note, sustained principally by the coal trade. Besides these there are a great number of small villages scattered through the coal region and inhabited chiefly by miners. *Pine Grove*, on the Swatara, at the head of the Union Canal Company's navigation, is a place of some importance as the point of shipment for large quantities of coal from the Swatara region.

The staple production is anthracite coal, of which about 600,000 tons are annually mined and sent to market; in addition to which, it is estimated that 20,000 tons are consumed within the county. The first coal for shipment from the Schuylkill region was mined in 1825, amounting in that year to only 5,306 tons. In 1830 it had increased to 89,984 tons,—in 1835 to 335,685 tons,—and in 1841 to 584,692 tons, exclusive of that mined in the Swatara region in the western part of the county. The population of the coal region is estimated at 16,000, in addition to which it is supposed that 1,500 persons are engaged in the transportation, &c., of coal on the canals and rail roads who do not reside within the county; making the population dependent upon the coal trade 17,500. The number of miners is about 1,700, and the horses and mules employed about the mines and in boating, not less than 2,000. The conveyance of coal out of the mines requires 1,500 drift cars, and its transportation to the landings and to market employs 2,000 rail road cars and 850 boats. Most of the mines being worked in the hills above water level, require no steam engines; but there are 17 collieries worked below water level, in which engines are used for pumping out the water, rais-

ing the coal, &c. Upwards of four millions of dollars are invested in objects immediately connected with the coal trade. The aggregate length of rail roads constructed by companies and individuals is upwards of 100 miles, in addition to which are about 40 miles of rail road laid under ground in the various mines.

Iron ore occurs at several places in the neighbourhood of Pottsville and in other parts of the county. Four furnaces, six forges, one rolling mill and five foundries have been erected for the manufacture of iron. There are 31 steam engines in the county, including colliery engines, amounting to upwards of one thousand horse power; twenty-three of these engines were manufactured in Schuylkill county. There are two extensive machine shops, three steam flour mills, 33 grist mills, 180 saw mills, 2 powder mills, and various other establishments for different kinds of manufactures.

Agricultural operations are chiefly confined to the valleys in the southern part of the county, and to those of Mahontongo, Pine and Deep creeks in the north-west, where there are many well cultivated and productive farms, the number of which is yearly increasing with the demand for agricultural produce in the coal region. Wheat, rye, corn, oats, buckwheat, potatoes and hay are raised in considerable quantities and find a ready market, at good prices, in Pottsville and other towns in the mining districts.

The assessed valuation of property taxable for county purposes in 1842, was \$5,037,632: county tax \$28,380: State tax \$8,015.

Of the public improvements, the most considerable is the Schuylkill navigation, of which about 18 miles are in this county; the rail road from Reading to Pottsville; and that intended to connect Pottsville with Sunbury on the Susquehanna, called the Pottsville and Danville rail road, about 12 miles of which are yet unfinished. The rail roads wholly within the county are the Mine hill and Schuylkill Haven, with its branches, altogether about 20 miles in length; the Little Schuylkill from Port Clinton to Tamaqua 23 miles; the Schuylkill valley, from Port Carbon to Tuscarora 9 miles; Mill creek 5 miles; Mount Carbon 7 miles; Lorberry and Swatara 8 miles; and the Union Canal rail road from Pine grove 8 miles; besides a number of private and branch rail roads leading to various mines. The Centre turnpike, from Reading to Sunbury, passes through the county by Port Clinton, Orwigsburg and Pottsville.

The state of education in this county is not very flourishing, and, except in Pottsville and some of the other towns, the subject receives but little attention. There are 23 school districts of which only ten have accepted the common school law, and have 39 schools established, which are taught during an average period of $7\frac{1}{2}$ months in the year. There is an academy at Pottsville and another at Orwigsburg; at the latter place is also a female seminary.

The early settlers of the county were mostly Germans, and that language is yet commonly spoken by their descendants. Since the commencement of extensive mining operations, the population of the coal region has been greatly augmented by an influx of people from other counties, and by great numbers from Wales, Scotland, Ireland and England.

State the boundaries of Schuylkill county. What is said of the face of the country, and its adaptation to agriculture? Describe the climate and mention the extremes of heat and cold. What mountain lies on the south? What others are between this and the Broad mountain? Describe the Broad and Mahontongo mountains. Name those situated in the north-east. Mention the situation and extent of the principal rock formations. Give a description of the southern coal field. What is said of the coal measures on the Broad mountain, and of the basins north of it? How is coal sent from the mines about Tamaqua? From those in the Schuylkill valley between Tuscarora and Pottsville? What is said of the mining region between the Sharp and Broad mountain in the neighbourhood of Pottsville? Of that on the West branch of the Schuylkill? How is coal sent from the Swatara region? What is said of the number and thickness of the coal beds in several mountains here? Of those at Klinger's gap in the Bear valley region? At what place has coal been mined north of the Broad mountain, and what is the character of the coal beds there? What streams water the middle and eastern part of the county? Describe the Little Schuylkill. Where does the West Branch empty? What other streams are mentioned in different parts of the county, and in what direction do they flow? What town is the seat of justice, and how situated? Mention the principal town in the county, and its situation. What is the principal business carried on here? Mention the public buildings. For what is this place remarkable? What other towns are mentioned as being sustained chiefly by the coal trade? Where is Pine grove and for what noted? What is the staple production of the county, and what amount annually mined? In what year was the first coal mined for shipment, and to what amount? State the amount produced in each of the several years mentioned. What is the number of persons supposed to be dependent upon the coal trade? Mention the number of miners, horses, cars and boats employed? What is the number of steam engines used, the amount of capital invested, and the length of rail roads constructed? Where does iron ore occur, and what iron works have been erected? Give an account of the steam engines, machine shops, mills, &c. To what parts of the county are agricultural operations chiefly confined? Where does the produce of the farms find a market? What public improvements are situated partly within the county? What rail roads wholly within it? What turnpike passes through it? What is said of the state of education, schools, and academies? Of what people were the early settlers, and by whom has the population been greatly augmented?

48. SOMERSET COUNTY.

Somerset county has Cambria on the north, Bedford on the east, the state of Maryland on the south, and Fayette and Westmoreland on the west. Its population in 1840 was 19,650.

The face of the country is varied, being in some parts mountainous, in others hilly,—a considerable portion is rolling and uneven, while some tracts have a comparatively level surface. There is also considerable variety in the character of the soil: the southern part of the county being generally considered the best for the growth of wheat and indian corn, while the middle and north produce good crops of oats, potatoes and grass. The whole county is well adapted to grazing and the keeping of cattle and sheep; there are many extensive dairy farms which produce large quantities of excellent butter.

The Allegheny mountain forms part of the eastern boundary of Somerset, and then ranges through the south-eastern part of the

county. In the south-eastern corner, the Little Allegheny and Savage mountains pass northward from Maryland and unite in a point near the Bedford county line, north of Wills' creek. In the south, Negro mountain extends northward from the state line and terminates a few miles south of the town of Somerset. The high ridge called Laurel hill is the western boundary as far south as to the Youghiogeny river.

Nearly the whole of Somerset belongs to the bituminous coal formation, and is separated into several basins by anticlinal axes, or lines of elevation along the mountain ridges, which bring up the rocks below the coal in these elevations, where the strata may be seen in the form of an arch, dipping on each side towards the centre of the basins between the ridges. In the gaps made by the passage of the larger streams through these mountains, the red shales and sandstones (XI) next below the pebbly conglomerate (XII) are seen, containing in many places a valuable bed of limestone, which sometimes contains impressions of shells, encrini, and other fossils. The conglomerate rock is usually found along the sides of the mountains, sometimes extending to the summits; and along the base the lower coal beds appear above it as it dips beneath them.

In the rough irregular valley between the Little Allegheny and Savage mountain, the Cumberland or Frostburg coal basin extends northward into Pennsylvania, being about 5 miles wide on the state line, and terminating in a point near Wills' creek, six or seven miles from the line. The upper coal bed is here about eight feet thick, occupying a position near the summit of a high ridge which extends nearly through the middle of the valley. It has been worked in several places, and yields coal of a very superior quality. Below this are a number of other coal seams from three to five feet thick, which show their outcrops in different places in the valley. Iron ore also occurs in the slates and shales between the coal beds.

The belt of country between Savage mountain and the Great Allegheny is occupied by red shale and sandstone rocks. Between the Allegheny and Negro mountains is another coal basin, extending northward by Berlin to the head waters of Shade creek, and thence into Cambria county. On some of the higher ridges in the southern part of this basin, we find a bed of coal nine feet thick, which is supposed to be identical with the great seam in Ligonier valley and with that worked at Pittsburgh. This is the highest coal seam in the basin, and below it are several others, which though not equal to it in magnitude, are of sufficient thickness to be profitably worked. Several strata of good limestone occur between the coal beds; and about the falls on Elk-lick creek and in several other places are promising indications of iron ore. In the neighbourhood of Berlin, several of the lower coal beds are worked for the supply of the town and its vicinity, being here from three to five feet thick, accompanied by iron ore and an impure limestone. Further northward, on Stony creek, in the neighbourhood of Stoystown, and on Shade creek, are innumerable openings into productive coal beds; but the demand for coal in this region being limited merely to the inconsiderable supply required for domestic consumption, but little has yet been done towards developing the extent of its mineral wealth. Not far from the mouth of Wells' creek, and in the same neighbourhood on Stony creek, are localities of iron ore which may prove valuable and important. Ore is also found in considerable quantity on Shade creek, where a furnace has been erected for the purpose of working it. Bog ore frequently occurs in beds on the surface along the eastern side of this basin, on the western slope of the Allegheny mountain.

In the western coal basin of the county, between the axis of Negro mountain and that of Laurel hill, though we do not find the great upper coal seam seen on the highest hills in the basin on the east, and also in Ligonier valley on the west; yet so numerous are the outcrops of the lower

beds in the hills along Castleman's river, Laurel hill creek, and other streams in different parts of the basin, as to show the abundant and inexhaustible character of the coal deposits in this part of the county. Iron ore is abundant in many places along the east side of Laurel hill, and has been mined near the head of Garey's run for the supply of Fayette furnace, on Indian creek, west of Laurel hill.

The *Youghiogeny* river, flowing northward from Maryland, forms the western boundary of this county as far as to its passage through Laurel hill, above which it receives the waters of *Castleman's* river from the east, and of *Laurel hill* creek from the north. The union of these three streams at the same point is called the "turkey foot" from their fancied resemblance to the three toes of a bird's foot, and Turkey-foot township has been so named from this circumstance. *Elk-lick* and *Buffalo* creeks are tributaries of Castleman's river; *Cox's* creek flows southward to the same river from near the town of Somerset. *Stony* creek is a large stream, rising in the eastern part of the county, and flowing northward to the Conemaugh at Johnstown. *Shade* creek rises by numerous branches in the wilderness region on the west of the Allegheny mountain, in the north-east of the county, and running westward empties into Stony creek. *Quemahoning* is also a branch of Stony creek, in the north, flowing north-eastward from the foot of Laurel hill. In the south-east are the head waters of Wills' creek, a branch of the Potomac. Near the summit of the great Allegheny, north-east of Berlin, are springs within a short distance of one another, the waters of which find their way to the ocean through the Susquehanna, by way of the Raystown branch and the Juniata; through the Potomac, by way of Wills' creek; through the Ohio by both of its branches, the Monongahela by way of Buffalo creek, Castleman's river and the Youghiogeny,—and the Allegheny, by way of Stony creek and the Conemaugh.

Somerset, the county town, has a nearly central position, and is situated on the turnpike from Bedford to Mount Pleasant, Washington, and Wheeling. It has about 650 inhabitants, and contains a court house, county offices, prison, academy and several churches.

Berlin, eight miles south-east of Somerset, is an incorporated borough, with upwards of 500 inhabitants. *Smythfield* (Somersfield P. O.) is a village on the east side of the Youghiogeny, where that river is crossed by the National turnpike. Four miles east of this, on the National road near the Maryland line, is *Petersburg* (Addison P. O.) also a considerable village. *Stoytown*, a borough with a population of 357, is near Stony creek, on the Bedford and Pittsburg turnpike. The other principal villages are Jennerville in the north-west, Milford in the west, and Shanksville in the east.

The agricultural products are wheat, rye, oats, buckwheat, corn, potatoes, flax, wool, &c. Great numbers of cattle and sheep are reared by the farmers, and large quantities of excellent butter from this county are sent to the eastern cities for sale. Nearly 300,000 pounds of maple sugar are made annually. On Stony creek is a furnace and a forge for the manufacture of iron; and other branches

of manufactures are established in different parts of the county, chiefly for the production of articles for domestic use.

Owing to the elevated position of this region the winters are usually severe; but the climate is remarkable for its general salubrity. The summers are much cooler than in counties but little above the tide level: frost is not uncommon in June and early in September.

Three of the leading turnpike roads from east to west pass through Somerset county. The National road crosses the southwestern corner; the turnpike from Bedford to Mount Pleasant, &c., passes through the middle; and in the north is the main turnpike from Philadelphia by Harrisburg, Chambersburg, Bedford and Greensburg to Pittsburg. There is also a turnpike leading south-eastward from the town of Somerset, by Berlin, to Cumberland in Maryland, from which point a rail road extends to Baltimore.

The general condition of education is not very flourishing, but is believed to be in a state of gradual improvement. Some parts of the county are thinly settled and schools are not easily maintained. There are in all 18 school districts, of which 12 have accepted the provisions of the common school law, and 9 have made report, showing that they have 56 schools established, and that the average time of instruction is little more than 4 months in the year.

A large proportion of the population is of German descent, mostly from the eastern counties; and the German language is commonly spoken. In the southern and south-eastern townships are numbers of inhabitants who speak little or no English. They are generally a plain, frugal, industrious people, obedient to the laws, minding their own business, and attentive to their moral and religious duties.

How is Somerset bounded? What is the character of the surface?—of the soil? To what purpose is it adapted? Describe the mountains on the east and south-east,—in the south and west. To what geological formation does most of this county belong? How is it separated into basins? What rock formations appear in the mountain ridges? Describe the coal beds in the basin between Little Allegheny and Savage mountains. What other valuable mineral occurs here? What rocks occupy the region between Savage mountain and the Great Allegheny? Describe the coal basin between Allegheny and Negro mountains. What is said of the coal beds in this basin?—of the limestone and iron ore? At what different places are all these valuable mineral products found? What is said of the western coal basin of the county? Where is iron ore abundant? What rivers are in this county? From what is Turkey-foot township named? What creeks empty into Castleman's river? Which are tributaries of the Conemaugh? Into what river does Wills' creek empty? What is said of the various courses to the ocean, of streams rising on the Allegheny near Berlin? How is Somerset, the county town, situated? Mention the other principal towns, and their situation. What are the chief products of farming industry? What is the amount of maple sugar made in a year? What is said of the manufactures generally? Describe the climate. What three turnpike roads cross the county? What is the general condition of education; number of schools, &c.? What people compose most of the population; and what is said of their language, and their character for industry and morality?

49. SUSQUEHANNA COUNTY.

Susquehanna county adjoins the state of New York on the north; Wayne county on the east; Luzerne and Wyoming on the south; and Bradford on the west. The number of inhabitants in 1840, was 21,195.

The surface is hilly and uneven, approaching to mountainous in the eastern part; but the hills are in general neither high nor precipitous, being chiefly ridges extending between the streams, and susceptible of cultivation on their sides and summits. Elk mountain, in the eastern part of the county, is the most elevated point of land in north-eastern Pennsylvania; its summit being about 2000 feet above the level of the sea. From the top of this mountain is afforded a most extensive and magnificent prospect of the surrounding country, embracing not only the whole of this county, with its broken and irregular surface of hills and dales,—its variegated forests and cultivated fields, its meandering streams and glistening lakes; but all the surrounding region from the bold sweep of the Susquehanna river on the north and west, to the Blue ridge and the towering Kaatskill on the south and east.

In the north-eastern part of the county, bordering on the Susquehanna, there are some ridges of waste and sterile land; but in general, though there is little of that level and highly fertile soil which abounds in other parts of the State, yet there is little waste land that may not be cultivated for grain or grass, and much that may be rendered productive to a considerable degree.

The geological features of this county are remarkably simple and uniform. In the northern part are the upper strata of the olive slate formation (VIII,) containing layers of grayish sandstone, and some slightly calcareous bands of rock which are filled with impressions of shells and various other fossil remains. In Choconut township, in the north-western corner of the county, is a bed of rock 10 or 12 feet thick, so calcareous as to yield a rough gray lime when burned, which may prove useful for agricultural purposes. The rock strata in the northern part of the county have a very gentle general inclination towards the south, and in that direction pass beneath the overlying red shales and reddish and grayish sandstones (IX) of the next superior series, which extend in nearly horizontal strata of thin, flat layers, over nearly the whole of the middle and southern parts of the county. The south-eastern corner, being near the northern point of the Lackawana coal basin, probably contains some of the higher formations approaching the coal series; but if the county reaches far enough in this direction to include any portion of the coal basin, it must be of very limited extent.

The *North Branch* of the Susquehanna river enters the north-eastern corner of this county, and making a short turn at the Great Bend, returns by a north-western course again into the state of New York, where it takes a circuitous sweep around to the west and south, returning again into Pennsylvania in Bradford county, a few miles west of the north-western corner of Susquehanna. The south-eastern portion of the county is mostly drained by *Tunkhannock* creek and its tributaries, *Martin's* creek, *Hopbottom*, &c., flowing south-westward to the Susquehanna. In the north are *Salt-lick*, *Snake* and *Choconut* creeks; in the west, *Wyakusing* with

its numerous branches ; and in the south-west the *Meshoppen*. All these, with numerous other streams, afford plenty of good mill seats, and every part of the county abounds with clear, cold springs and brooks of excellent and pure water.

The varied and romantic beauties of the natural scenery in this county are much improved by the number of small lakes which are found in almost every township, and whose crystal waters, gleaming in the light of the setting sun, like polished mirrors amidst the dark shadows of the surrounding woods, give life and brilliancy to the picture. On the margin of one of these beautiful sheets of water, called Silver lake, 8 miles north of Montrose, is the elegant mansion of the late Dr. Rose, one of the early settlers of the county, an extensive landed proprietor, who aided much in bringing this region into notice, and promoting its rapid settlement.

A number of the streams are precipitated over high ledges of horizontal rocks and form waterfalls of remarkably picturesque and beautiful appearance. Silver creek, on its passage through a high ridge into the valley of Snake creek, forms a succession of cascades, some of which are 50 feet high ; and at the foot of the lower fall the banks rise precipitously from the stream to the height of 200 feet, fringed at the top and on each side with tall hemlocks, forming a singularly wild, deep and dark romantic glen, into which the cheerful light of day scarcely finds an entrance. On Cascade creek, in Harmony township near the Great Bend of Susquehanna, is a beautiful waterfall which is frequently visited by the admirers of wild and picturesque scenery. The stream falls about 30 feet over a ledge of rocks, the horizontal strata presenting a series of regular gradations like the steps of an elevated portico. Near this, another stream precipitates itself from an elevation of more than 100 feet, and is converted into glittering spray long before it reaches the bottom.

The climate, though subject to considerable extremes of heat and cold, is esteemed as being remarkably healthy. At Silver lake the mercury in winter sometimes falls to 15 or 20° below zero, and in summer rises to 94°. The elevated position of the country renders it liable to some high winds and violent storms, as well as sudden changes of temperature. The winters usually last from the middle of November until the beginning of April ; but when spring opens the progress of vegetation is rapid : the summer air among the hills is peculiarly delightful and salubrious.

Montrose, the county town, occupies a nearly central position, and is situated at the intersection of several important turnpikes and mail routes, where daily stages meet from the north and south, and from the east and west. The streets are wide and commodious, but owing to the unevenness of the ground, are somewhat irregularly laid out. The public buildings are a court house, a stone fire proof edifice for county offices, a bank, an academy and four houses for public worship. The houses are generally built of wood ; mostly painted white and presenting a neat appearance ; the whole place, as has been frequently remarked, much resembles a New England country village. The number of inhabitants is about 700.

Dundaff, in the south-eastern corner of the county, is an incorporated borough with upwards of 300 inhabitants. New Milford and Great Bend are villages in the north; Friendsville in the north-west; Springville in the south, and Harford in the south-east.

Agricultural pursuits form the prevalent occupation of the inhabitants and employ the greatest portion of the population. The soil and climate seem to be peculiarly adapted to the growth of oats and potatoes, of which large and superior crops are produced. Wheat and rye succeed best on newly cleared lands; indian corn is raised to some advantage in certain situations, but in general is not so successful as other crops. As a grazing country, for the rearing of cattle and sheep, Susquehanna county is exceeded in natural advantages by few portions of the State. Increasing attention is given to the making of butter and cheese; there being already a number of thriving dairy farmers established here from Orange county, New York. They, with the frugal and thrifty settlers from New England, will soon render this county famous for its butter and cheese. Wool growing has become an important branch of business; the number of sheep kept in the county being upwards of 72,000, from which more than 121,000 pounds of wool are annually produced.

Sugar maple trees are abundant in the forests, and sugar is extensively manufactured. In 1840 the product of this article was 252,137 pounds. The other most common kinds of timber are hemlock, beech, birch, cherry, chestnut, ash, bass-wood, &c. Oak is most common on the hills about the river. Pine grows along the river and larger streams, from which lumber is produced to some extent: this, together with the oak, cherry, curled maple, &c., annually sent to market, is estimated to be worth \$40,000. The lumber finds a market chiefly by the Susquehanna and Delaware rivers; cattle and sheep are driven to New York and New Jersey for sale; the surplus products of agriculture are sold to a considerable amount at Carbondale for the support of the numerous population about the coal mines at that place.

The assessed value of real and personal property, subject to county taxation for 1842, was \$2,522,362: county tax \$7,716: State tax \$2,980.

There are no canals or rail roads in the county, though the North Branch division of the State canal on the south, and the Chenango canal on the north, approach sufficiently near to benefit the trade of the county when they shall be completed. The great New York and Erie rail road will pass near on the north, if not ultimately laid through part of this county; permission for which has been granted by the legislature. Several turnpike roads cross the county in various directions. One in the north-east, from Belmont to Harmony, and another from Belmont to Great Bend. One through the county from south-east to north-west, passing from Carbondale through Dundaff and Montrose to Owego on the Susquehanna; which is intersected at Montrose by the turnpike from Wilkesbarre, through Tunkhannock, &c. Beside these there are

some others either completed or partly constructed between different points.

In this, as in others of our northern counties which have been settled chiefly by families from the Eastern states, education receives more attention, and schools are better established than in most other parts of the State. There are 23 school districts in the county, all of which accepted the provisions of the law regulating the common school system, soon after its passage. In 21 of these districts which have reported, there are 185 schools established for instruction according to the provisions of the law, which are kept open, on a general average, nearly six months in the year. There are two incorporated academies: the Susquehanna academy at Montrose has recently assumed a very promising condition; and the Franklin academy at Harford has also attained a creditable reputation.

There are 28 houses for public worship: nine of which belong to Presbyterians, six to Baptists, three Episcopal, three Methodist, two Roman Catholic, two Universalist, one Friends, and two built by various denominations united. In a large number of cases, small congregations who have not the means of erecting churches, hold their meetings for worship in school houses.

How is Susquehanna county bounded? What is the character of the surface? Describe Elk mountain and the prospect from it. What is said of the productive character of the county? Give an account of the general geological features and rock formations. Where is an impure limestone found? Describe the course of the North branch of Susquehanna. What creeks are in the south-east?—in the north?—in the west and south-west? What is said of the lakes? Where is Silver lake? Describe the waterfalls on Silver creek and Cascade creek. What is said of the climate? Give a description of Montrose, its situation, public buildings, &c. What other towns are mentioned? What is said of the agriculture of this county and its principal productions? Mention its advantages as a grazing country, and for producing butter, cheese, &c. What is the number of sheep, and the amount of wool annually produced? Notice the prevailing kinds of timber, and the amount of maple sugar made. Where do the surplus productions find a market? What rail roads and canals will benefit this county, though not within it? Mention the various turnpike roads. What is said of the attention paid to education, and of the number of schools, academies, &c.? How many houses for public worship are there, and to what religious denominations do they belong?

50. TIOGA COUNTY.

Tioga county adjoins the State of New York on the north, Bradford on the east, Lycoming and Clinton on the south, and Potter on the west. Population, 15,498.

The face of the country resembles that of the northern line of counties generally, being no where mountainous, but hilly and uneven; deeply furrowed by the channels of the streams, with steep and rough acclivities rising to the upland.

The soil of the bottom lands in the valleys of the streams is of superior quality; that on the hills is less productive, but yields good pasturage and tolerable crops of grain when well cultivated.

Nearly the whole of this county is occupied by the olive slates, red shales and sandstones of the formations below the coal series. In the neighbourhood of Blossburg, however, on the Tioga river near its source, is a coal basin several miles in extent, in which the deep channels of the streams have cut through and exposed numerous successive beds of coal, fire clay and iron ore, belonging to the lower portion of the bituminous coal formation. Iron works have been erected at Blossburg, and a rail road constructed to Corning in the State of New York, in order to afford an outlet for the mineral treasures of this district.

The *Tioga* river runs northward from this county into the State of New York, and then turning to the east and south-east, re-enters Pennsylvania in Bradford county and unites with the North branch of Susquehanna. *Cowanesque* is a considerable stream in the north of the county, flowing eastward to the Tioga. In the south-west is *Pine* creek, running southward to the West branch of Susquehanna. All these streams are navigable for rafts of lumber and arks at high water.

Extensive forests of pine, hemlock, oak, beech, sugar maple and other timber cover a large portion of the county. Lumber is the staple production and about 150 saw-mills are in operation for its manufacture. About 200,000 pounds of maple sugar, and 50 tons of pot and pearl ash are made annually. Agriculture is improving, and wheat, corn and other grains are successfully cultivated: oats and potatoes thrive particularly well, the soil and climate appearing to be congenial to their growth.

Wellsboro is the seat of justice, situated nearly in the centre of the county, containing a population of about 400, and having the usual county buildings, such as court-house, prison, academy, &c., with several places of public worship.

The other towns and villages are small: the principal are Tioga, Covington, Blossburg, Lawrenceville, Elkland, Knoxville and Mansfield.

Common schools are established in nearly all the districts, 23 in number, of which 22 have accepted the law, and 20 made report to the superintendent in 1842, showing that there were then 126 schools in operation, the average number of months taught being 5½ in the year. The academy at Wellsboro is reported to contain 135 pupils.

Of the various religious denominations, Methodists, Presbyterians and Baptists are most numerous. The religious and moral character of the population is improving; industry, sobriety and good order being now generally prevalent.

Tioga, like most of the northern counties, was settled chiefly by adventurers from the New England states, and the peculiar language, habits and manners of that people still prevail to a considerable degree among the inhabitants.

What are the boundaries of Tioga? Describe the face of the country? What is the quality of the soil? What rock formations occupy most of the county? What valuable minerals are found in the neighbourhood of Blossburg? What works have been constructed in order to give value to the mineral products of this region? Describe the course of Tioga river. Name the other principal streams and their direction. What is said of the

forests and the production of lumber? State the amount of maple sugar and potash made. Mention the improvement of agriculture and its products. Name the county town and how situated. What other places are mentioned? What is said of the schools?—Of the religious denominations and the moral character of the people? By whom was the county principally settled?

51. UNION COUNTY.

Union county has Lycoming on the north; the river Susquehanna on the east, separating it from Northumberland; Juniata county on the south; and Mifflin and Centre on the west. Population 22,787.

The White Deer mountain forms the northern boundary; south of this is Buffalo mountain; in the west is Jack's mountain, extending half across the county; and in the south, Shade mountain, terminating a few miles west of the Susquehanna. The southern part is much broken by small ridges and ranges of hills, and with the exception of the bottom land along the Susquehanna and the small valleys of Middle creek, Musser's, and Kloppehdahl, the soil is but of moderate quality. These valleys, together with Buffalo, White Deer and Dry valleys in the north, have principally a calcareous soil of a very fertile character, and admirably adapted to agriculture.

The general geological character of the county may be understood from the following brief sketch. Shade, Jack's, Buffalo and White Deer mountains contain the hard sandstone (IV) usually found in the higher ridges of the Appalachian portion of the State. Between Jack's mountain on the south and Buffalo and White Deer on the north, is the overlying series (V) of red and variegated shales, containing bands of limestone, sandstone, and the fossiliferous iron ore: this formation extends to the West branch of the Susquehanna, spreading out over most of White Deer and Buffalo valleys, and also the valley of Penn's creek north of Jack's mountain. Folding round the end of Jack's mountain, it is seen along the southern side, extending into Mifflin county. The same formation may be seen on both sides of Shade mountain, meeting at its eastern end and extending towards Selinsgrove. The limestone (VI) next above in order, is the rock of the limestone ridges which extend through the valley between Jack's and Shade mountain; the upper portion being very silicious, and containing beds of *chert* or flint, the angular fragments of which cover the surface in many places. The coarse fossiliferous sandstone (VII) is scarcely seen in its proper place above the limestone, appearing to thin out towards the Susquehanna. At Blue hill on the Susquehanna, opposite Northumberland, and extending for some distance both up and down the river, are the red and gray sandstones and shales of the formations (VIII and IX) next above those last mentioned; their lower beds being bordered by the limestone ridges on the north and south of them, as they range south-westward. Another triangular territory is occupied by these slates and sandstones, extending on the Susquehanna from the limestone below Selinsgrove to that nearly opposite Georgetown, and narrowing to a point south-westward.

The red fossiliferous iron ore which is so abundant on Montour's ridge, in the neighbourhood of Danville and other places, is prolonged in the same range across the West branch into Union county, being found about the mouth of Turtle run. Its thickness, however, appears to diminish as we trace it south-westward: it is found at several other places in Union county, but not yet in sufficient quantity to be valuable. Some of the lower calca-

reous beds of the olive slate formation (VIII) seem to be well adapted for furnishing a good hydraulic cement.

The *West branch* of Susquehanna washes the eastern side of this county to its junction with the North branch at the town of Northumberland, from which the *Susquehanna* continues to the southern line of the county. The other large streams are *Penn's* creek, flowing eastward nearly through the middle of the county; *Buffalo* and *White Deer* creeks in the north; and *Middle* and *West Mahontongo* creeks in the south; all running eastward to the Susquehanna, and with their numerous branches affording water power for the many mills erected on their banks.

In describing the towns in Union county, it is proper to observe that most of them, like many others in different parts of the State, have two names, being called indifferently by either, thus producing by this absurd practice much confusion and embarrassment to strangers.

New Berlin (Longstown) is the seat of justice, situated on Penn's creek, rather in the eastern part of the county, having a population of nearly 700. The court house and county offices are of brick, the prison of stone; there are also two churches and two public school houses.

Lewisburg (Derrstown) on the West branch, at the mouth of Buffalo creek, is a flourishing town with upwards of 1200 inhabitants, and being the point whence much of the produce of the surrounding country is shipped on the West branch canal through a side cut leading to the town, is a place of considerable business.

Mifflinsburg (Youngmanstown) is in Buffalo valley, with a population of about 700; and *Hartleyton* is in the same valley, about 5 miles further westward. *Selinsgrove* is on the Susquehanna near the mouth of Penn's creek, which uniting with Middle creek, enters the Susquehanna by two outlets, and thus, with the river, encloses the island of Que, on which is a village called Charles-town, separated from the town of Selinsgrove by Back creek, or the united stream of Penn's and Middle creeks.

Middleburg (Swinefordstown), *Swiftstown* and *Adamsburg* are in the valley of Middle creek; and *Freeburg* (Stroupstown) in Kloppehdahl, south-west of Selinsgrove. New Columbia is in the northern part of the county, on the West branch below the mouth of White Deer creek.

This is one of the finest agricultural counties in the State. Wheat and flour are the great staple productions; indian corn, rye, oats, clover-seed, beef, pork, &c. are also sold annually to a considerable amount,—the soil of these fertile valleys yielding a large surplus beyond what is necessary to support the inhabitants. The culture of tobacco has been recently introduced upon the rich bottom land along the river, and is likely to prove profitable.

The manufactures, except for domestic use, are not important. There are some small woollen factories; a forge on Penn's creek; two or three iron foundries; and a number of establishments for making carriages, wagons and farming implements.

The value of property assessed for county taxes in 1842, amounted to \$6,115,066; county tax \$6,820; State tax \$8,814.

The Susquehanna division of the State canal extends along the eastern side of the county to Northumberland, where the tow-path crosses the West branch by a beautiful bridge, over which there is also a carriage way. The West Branch canal being on the east side of the river, a side cut extends from Lewisburg in this county to the pool formed by a dam in the river, and thus communicates with the canal.

A turnpike road extends from Lewisburg by Mifflinsburg, and Hartleyton to Aaronsburg and Bellefonte in Centre county; being a link in the turnpike from Philadelphia to Erie, through Reading, Pottsville, Sunbury, Northumberland, Lewisburg, Bellefonte, Franklin and Meadville,—the only part of which now unfinished is from Sunbury to Lewisburg, a distance of nine miles. There are three bridges across the West branch of Susquehanna within the bounds of Union county; the State bridge at Northumberland, and two company bridges in which the State holds stock, one of them at Lewisburg and the other at Milton. Bridges have been erected by the county at most places where the principal streams are crossed by the main public roads.

Education has been much neglected. A large proportion of the inhabitants are Germans, who regard the cultivation of the soil as being of more importance than the cultivation of the mind; and consider the accumulation of wealth more desirable than the acquisition of knowledge. The county contains 16 school districts, only 7 of which have accepted the law establishing the common school system. In the accepting districts 31 schools are reported as being in operation, which are kept open 5 months in the year.

This county was originally settled by people from Chester and Cumberland counties, and some from New Jersey. The fertility of the soil and the general excellence of the country for agricultural pursuits, soon attracted the German farmers to establish themselves in the rich valleys; and at the present day they form a large portion of the population. The German language is common throughout the county, but the English is also understood and spoken when necessary, by nearly all the inhabitants of German descent.

There are nearly 30 places of public worship, belonging to various religious societies, the most numerous of which are Presbyterians, Lutherans, German Reformed and Methodists.

How is Union county bounded? Name the principal mountains. What is said of the face of the country, and the soil of the valleys. Describe the range of the principal rock formations. What is said of the red fossiliferous iron ore in this county? What river runs along the eastern side? Mention the other considerable streams. How is the county town situated, and what public buildings does it contain? Where is Lewisburg, and what is said of its trade, &c.? What towns are in Buffalo valley? Where is Selinsgrove? What other places are mentioned? What is said of the agriculture of this county, and its productions?—of the manufactures? Mention the canals in or adjacent to Union county. What turnpike road, and bridges? To what may be attributed the neglect of education? What is said of the common

schools? By whom was the county originally settled? What language is commonly spoken? Name the principal religious societies.

52. VENANGO COUNTY.

Venango county is bounded north-west and north by Crawford and Warren, east by Jefferson, south-east by Clarion, south by Butler and west by Mercer. Its population, exclusive of that portion now included in Clarion, is about 14,320.

The country presents an uneven surface, being intersected by deep and narrow valleys of fertile bottom land along the streams, with steep and often rocky hills ascending to the level of the rolling table land which extends between the streams. This upland is generally fit for cultivation, and much of it would be excellent for grazing.

The *Allegheny* river passes through the whole breadth of this county, having a course generally south-west to the town of Franklin, where it turns to the south-east and flows in a meandering direction to the southern limit of Venango. At Franklin this river receives the waters of *French* creek from the north-west, and 5 or 6 miles above, *Oil* creek empties into it from the north. *Teonista* is a considerable stream in the north-east, flowing south-westward to the Allegheny. All these streams are navigable for many miles for flat boats and rafts of lumber descending. A multitude of smaller streams water this region, among which are Sugar, Sandy, Scrubgrass, Hemlock, Rackoon and other creeks, whose waters are sufficient to propel any kind of machinery even in the driest seasons. Pure and limpid springs gush from the hills in abundance, and some are found having their waters impregnated with mineral substances.

Oil creek derives its name from the substance called Seneca oil, which rises in bubbles from the bed of the stream, and on reaching the top of the water these bubbles explode, leaving the oil floating on the surface. Though this oil is found in many places throughout the whole course of the stream, it is most abundant two or three miles from the mouth, where several of the owners of the land make a business of collecting the oil during the dry season, as it is most plentiful at low water. A dam of loose stones is raised a little higher than the surface of the water, 10 or 15 feet in diameter around those places where the oil rises; an eddy is thus created inside of the wall which confines the floating oil, while the water passes freely between the loose stones. The oil is thus suffered to accumulate for one, two or three days, until it becomes an inch or more in depth; a piece of flannel or blanket is then spread over it which absorbs the oil, and it is afterwards wrung from the cloth into a barrel or some other vessel. The water which may be raised with it is drained off through a small hole at the bottom of the vessel. From two to ten or twelve barrels are collected in a season by each of the proprietors; the quantity depending upon the prevalence of dry weather and low water.

In the low grounds along this creek, oil may be obtained by dig-

ging to a level with the bottom of the stream, but when thus procured it is not so pure and clean as that taken upon the surface of the creek. This mode of obtaining it has evidently been practised by the Indians, or some other people, long before the white man set his foot upon the soil of this region. Places of four or five acres in extent may still be seen, where holes have been dug in the ground from six to twelve feet in diameter, close together, being yet from two to four feet deep, and having trees standing in many of them of upwards of 100 years' growth. On the settlement of this part of the country, some of the oldest Indian residents were questioned respecting these excavations, but were unable to give any information concerning them.

The medicinal qualities of this oil have been much extolled. Forty or fifty years ago it was sold at 16 dollars per gallon; but its present price in Pittsburg is from 75 cents to \$1. It burns well in lamps, though it emits a heavy black smoke and a strong bituminous odour, which to many persons is disagreeable.

Venango county lies on the northern border of the great bituminous coal field, and valuable beds of coal occur in many places in the southern portion of its territory. In the slates and shales of the lower strata of the coal measures, nodular argillaceous iron ore is found in considerable quantity; and numerous and valuable deposits of bog ore exist in other parts of the county. The productive developement of these mineral resources has already excited considerable attention, and 17 furnaces are in operation for the making of pig iron and castings from the ore of this region. Sandstone admirably adapted to the construction of furnaces is abundant, and some varieties of it are proper for the manufacture of glass.

Franklin, the county town, is situated at the confluence of French creek with the Allegheny, and contains about 600 inhabitants. The court-house and prison are built of stone; there is also an academy and three churches,—one belonging to the Methodists, one to the Presbyterians,—the other was built for Episcopalians but is now occupied by Cumberland Presbyterians.

Utica, seven miles from Franklin, on French creek, has grist, saw, and fulling mills; an iron foundry, &c. *Cooperstown*, on Sugar creek, seven miles from Franklin, contains a woollen factory where carding, spinning, weaving, fulling and dyeing are carried on; also grist and saw mills. *Sunville*, *Dempseytown*, *Perrysville*, *Waterloo*, *Clintonville* and *Teonista* are villages in different parts of the county.

The agricultural productions are wheat, rye, corn, oats, buckwheat, potatoes, &c. The soil is naturally favourable to the growth of grasses, such as timothy and red top: clover is also cultivated successfully.

Iron is the principal article of manufacture. Grist and saw mills are numerous, with some oil mills, and there are several establishments for the production of woollen goods, chiefly for home consumption.

Timber is abundant both in quantity and variety, consisting of various kinds of oak, chestnut, hickory, beech, sugar maple, wild cherry, poplar, black and white walnut, pine and hemlock.

Assessed valuation of property in 1842, \$1,219,595: county tax \$6,310: State tax \$1,459.

That division of the Pennsylvania canal called the Franklin line passes along the Allegheny river to Franklin, the county town, and thence extends up French creek to Meadville in Crawford county.

Several turnpike roads pass through Venango. It has about 26 miles of the Susquehanna and Waterford turnpike, which forms the nearest route from Harrisburg to Erie by way of Lewistown, Bellefonte, Clearfield, Brookville, Clarion, Franklin, Meadville and Waterford to Erie. Of the turnpike from Franklin to Butler and Pittsburg, it has 18 miles. The Franklin and Warren turnpike passes 24 miles through Venango. Franklin is 25 miles from Mercer, 25 from Meadville, 40 from Butler, 28 from Clarion and 51 from Warren,—all county towns of the adjoining counties.

Venango contains 17 school districts, all of which have accepted the provisions of the law regulating common schools. Instruction is given in 108 schools during an average period of about 4 months in the year; a time much too limited to develop the benefits of the system. A considerable portion of the county being comparatively new, and thinly settled, we may hope for improvement in the means of education as the country becomes more populous.

Of the religious societies the Presbyterians and Methodists are most numerous: there are some Baptists, a few Mormons, and several others of various persuasions.

The territory of this county was originally included in Westmoreland, and after the erection of Allegheny county it was within its limits, as were many of the neighbouring counties before their separate organization. Most of the lands at an early day were owned by companies, such as the Holland Land Company; and large tracts by John Nicholson and other individuals. A portion of the county was donation land granted to old soldiers, and another part was the property of the State. Settlements were encouraged by the proprietors; but many of the early settlers being merely "squatters," having no legal title to the lands claimed by them, were in process of time ejected by the rightful owners, and many fine farms were thus abandoned, the buildings and fences destroyed, and some parts of the county nearly depopulated. This, and other circumstances connected with the confusion and uncertainty of land titles, tended for a long time to retard the settlement and improvement of the county.

On the Allegheny river, at the mouth of Oil creek, is a beautiful and fertile tract of bottom land which formerly belonged to Cornplanter, the Seneca Indian chief. About sixteen years ago, he sold it to some persons who erected a furnace and other works on it, and the once quiet abode of the Seneca chieftain is now converted into a bustling, noisy manufacturing establishment by the restless enterprise of the busy white man, who derives wealth from the bowels of the hills over which the Indian not long since chased the game which yielded him a scanty subsistence.

How is Venango bounded? Of what description is the surface and soil? What river passes through the county, and in what direction? What large creeks empty into it? Name some of the smaller streams. From what does Oil creek derive its name? Where is this oil most abundant? Describe the mode of obtaining it. What quantity is collected in a season? In what other manner may it be procured? What is said of ancient diggings along the banks of the creek? What are the properties of the oil, and what is said of its price? What valuable mineral productions abound in this county? Mention the iron works in operation. To what useful purposes is a sandstone applied? What is the county town, how situated, and what public buildings does it contain? Where are Utica and Coopers-town, and what are their manufacturing establishments? What villages are mentioned? What are the agricultural productions and the character of the soil? Mention the principal manufactures. What is said of the timber? What canal is in this county? Name the turnpikes. What is said of the schools?—of the religious societies? To what county did this territory originally belong? What circumstances retarded its settlement and improvement? What is said of a tract of land which belonged to Cornplanter, an Indian chief?

53. WARREN COUNTY.

This county is bounded on the north by the state of New York, on the east by the county of M'Kean, on the south by Jefferson and Venango, and on the west by Crawford and Erie. Population 9,278.

The general face of the country is hilly and broken, but not mountainous, and along the margins of the largest streams are extensive tracts of bottom lands of good quality. With the exception of these bottom lands, the general character of the soil is that of a gravelly loam with some intermixture of clay, and of moderate fertility, though susceptible of improvement by cultivation.

The climate is similar to that of the other northern counties. In January the mercury in the thermometer is sometimes as low as 15 or 20° below 0; and in summer as high as 95°. The mean annual temperature is about 50°. Winter usually sets in about the first of November, although the streams seldom freeze before the middle of December. Spring generally opens from the middle of March to the first of April.

Warren, the county town, is an incorporated borough containing 737 inhabitants, situated at the junction of Conewango creek with the Allegheny river. It contains a court-house, a jail, an academy, and two churches, one of which belongs to Methodists and the other to Presbyterians. Besides these public edifices there are also many well-built and handsome private dwellings. Columbus, Youngsville and Pinegrove are the principal villages.

The *Allegheny* river enters this county at the north-eastern corner, and passing nearly through the middle of Warren flows south-westward into Venango. *Conewango* creek is a considerable stream, running southward from the state of New York, and emptying into the Allegheny at the town of Warren. Six miles below, the *Brokenstraw* creek also falls into this river from the westward. On both of these streams are numerous saw and

grist mills. *Teonista* creek rises in the south-east, and affords abundance of water power, some of which is employed by mills. *Kenzua* creek flows from the eastward and discharges its waters into the Allegheny about 12 miles above Warren. All these streams are sufficiently large for floating down lumber at high water.

The principal agricultural productions are wheat, rye, oats, indian corn and potatoes; all of which, except wheat, are raised in sufficient abundance for home consumption. Immense quantities of lumber are produced from the numerous saw mills, and sent down the Allegheny river to Pittsburg, from which place much of it finds its way to a market in the towns on the Ohio and Mississippi.

The assessed value of real and personal property subject to taxation for county purposes in 1842 was \$886,237: county tax \$5,515: State tax \$1,012.

There are two turnpike roads in the county, called the Warren and Franklin, and the Warren and Ridgeway turnpikes. The common roads, as is usual in newly settled districts, are only kept in tolerable condition; but are sufficient to accommodate the scattered population.

Education is not neglected in this comparatively wild and forest region. Of the 15 school districts, all have accepted the provisions of the common school system, and 92 schools are reported as being in operation, which are kept open on an average six months in the year.

This county is mostly settled by families originally from some of the Eastern states.

How is Warren county bounded? Describe the face of the country and the general character of the soil. What is said of the climate, and of the extreme and mean temperature? How is the county town situated, and what is said of it? Mention the principal villages. What is the principal river, and its course? Name the large creeks, their situation and direction. What are the agricultural products? What is said of the lumber produced, and where is it sent? Mention the turnpikes and the condition of the common roads. What is said of education and the number of schools? By whom is the county chiefly settled?

54. WASHINGTON COUNTY.

Washington county is bounded north by Beaver, north-east by Allegheny, east by Westmoreland and Fayette, south by Greene, and west by the state of Virginia. Its population, according to the census of 1840, was 41,279.

There are no mountains in this county, but the surface is hilly and uneven, being deeply furrowed by valleys along the streams, between which the upland is of a rolling or undulating character.

The soil is remarkably fertile, and as an agricultural district is inferior to few counties in the State. A healthy and pleasant climate, and scenery of the most varied, interesting and picturesque character, lend additional attractions to this favoured region.

The rocks in this part of the state belong to the upper series of our bituminous coal formation, and consist of alternating strata of sandstones, shales and limestones, with interposed beds of coal from three to six or eight feet in thickness. These nearly level strata, extending over the whole of this and a great part of the adjoining counties, are cut through by the deep valleys of the streams and exposed in varied succession in the steep banks and along the hill sides, in situations favourable to access and affording great facilities for mining and quarrying. Coal for domestic consumption is abundant in every part of the county, and along the bank of the Monongahela it is dug in great quantities and sent in flat boats down the Ohio river for sale.

The *Monongahela* river flows along the eastern side of Washington, in a winding channel, for a distance of nearly thirty miles. There are no other large streams in the county; but it is well watered for agricultural and manufacturing purposes by numerous creeks tributary to the Monongahela and Ohio. *Chartier's* creek rises here by numerous branches, flows northward and falls into the Ohio below Pittsburg. In the south are the waters of *Ten-mile* creek, which runs eastward to the Monongahela, and in the west those of *Buffalo* and *Cross* creeks flowing westward to the Ohio.

Washington, the county town, occupies a nearly central position, and is situated on the National road 30 miles east of the Ohio river at Wheeling, and 25 south-west from Pittsburg. It is an incorporated borough, containing, according to the census of 1840, about 2100 inhabitants. The town presents a pleasing and somewhat imposing appearance, owing to the number of spacious and elegant public and private edifices with which it is adorned. The buildings of Washington college, the large and handsome new court-house recently erected at an expense of upwards of \$20,000, the market-house, the female seminary, and a number of well built churches, add much to the general aspect of this beautiful and flourishing place.

Monongahela city, formerly called Williamsport, on the Monongahela river, in the eastern part of the county, is a rapidly improving town, the seat of extensive manufactures of glass and other articles, as well as a place of considerable commercial business. Its population is about 800.

Canonsburg is a pleasant town, 7 miles north of Washington, containing about 700 inhabitants. It is the seat of Jefferson college, a flourishing and well conducted institution.

West Alexandria is on the National road, 17 miles west of Washington, near the Virginia state line. *Claysville*, on the same road, 11 miles from Washington, has a population of 300. *West Middletown* is about 13 miles north-west from Washington, containing 260 inhabitants. *Hillsboro* is on the National road, between Washington and Brownsville. Florence, Cross-creek, Greenfield and a great number of other flourishing and pleasant villages are scattered through the county.

The staple agricultural productions are wool, wheat, corn, oats, flour, horses, hogs, cattle, sheep, &c. As a wool growing county Washington ranks among the foremost in the Union, its annual product amounting to 482,603 pounds: the number of sheep kept is

about 223,000, and great numbers are driven to the eastern counties for sale.

Flour is extensively manufactured: 25 flour mills produce yearly about 95,000 barrels, and in addition to these there are 66 grist mills driven by water power and steam. The manufactures of glass are estimated to amount to \$100,000 annually. Various other branches of domestic industry are successfully pursued, which add to the wealth and prosperity of the community.

The assessed valuation of property subject to taxation for county purposes in 1842 was \$7,626,299: county tax \$22,879: State tax \$9,720.

None of the canals and rail roads constructed by the State are in Washington county. The improvements partly completed by the Monongahela Navigation Company will have a tendency materially to facilitate the trade of the eastern portion, particularly the shipment and transportation of coal, of which about 1,000,000 bushels are already mined annually in this county alone.

The turnpike road constructed by the National Government, and which is the great throughfare from Washington city and Baltimore to the western states, passes through the county, from Brownsville on the Monongahela to the Virginia state line, eight miles east of Wheeling. This is intersected at the town of Washington by the turnpike from Bedford through Somerset, Mount Pleasant and Monongahela city. Several other good roads pass in various directions.

The people are generally moral and industrious in their habits, intelligent and public-spirited, careful to provide the means of education and attentive to its progress. The common school system is in full operation in all of the 29 districts in the county, and 211 schools are open for instruction during a general average of nearly six months in the year.

Washington college is founded on the model of the best eastern institutions, and the object of the faculty and board of trustees has always been to impart a solid and accurate, rather than a hasty and superficial education. It has five professors, viz.: one of mental and moral science, natural theology, &c.; one of mathematics, chemistry and natural philosophy; one of ancient and modern languages; one of belles-lettres, political economy and constitutional law; and one of English literature. There are three valuable and well selected libraries connected with the college, containing about 4,000 volumes. There is a cabinet collection of minerals and other specimens illustrative of natural science, with coins, Indian, Eastern and African antiquities, &c. This college is bound to educate annually, free of charge, 20 young men who wish simply to qualify themselves as teachers. The influence of the college and the number of educated and literary persons resident in the town, give a tone to the habits and manners of the population. The general society is good, and the people religious, moral and hospitable.

Washington female seminary was established in 1836. The building is large and handsome, and the interior arrangement con-

venient and well furnished for the purposes of education. There are five teachers in the institution who are employed in instructing young ladies in the useful and ornamental branches of female education, including vocal and instrumental music; the French and Latin languages; drawing; painting; arithmetic; algebra; geometry; natural, moral and intellectual philosophy; rhetoric; logic; chemistry, and botany; besides the elementary branches of an English education, reading, writing, grammar, geography, history, &c. This establishment is conducted on the principles of the celebrated Troy seminary in the state of New York, and most of the teachers are from that institution.

Jefferson college, at Canonsburg, was founded in 1802. It has four professors and two tutors; the course of instruction being similar to that in well regulated institutions of the same character. The number of students in the college proper is usually from 150 to 180, and in the preparatory department about 60. There is an extensive philosophical and chemical apparatus, a large library, and a collection of specimens in natural science, with many Indian antiquities and other curiosities. A preparatory school is connected with the college, in which young men are educated for teachers of common schools.

Washington county was chiefly settled by emigrants from the north of Ireland; some from New Jersey, and a number of Germans from other parts of Pennsylvania. Their descendants are now becoming blended into one people, of similar habits, manners and language.

Describe the boundaries of Washington county. What is the character of the surface? What is said of the soil and climate? To what series do the rock strata belong, and what valuable mineral product is abundant? What river flows along the eastern side of the county? Name the principal creeks and their course. How is Washington, the county town, situated, and what is said of its general appearance? Mention some of the public buildings. What was Monongahela city formerly called, and where situated? What is said of its manufactures and business? Where is Canonsburg, and what institution of learning is located there? Mention the other principal towns and their situation. What are the staple agricultural products? What is said of the number of sheep and the quantity of wool produced? Give some account of the manufacture of flour, glass, &c. What advantages will arise from the completion of the Monongahela navigation? Describe the turnpike roads. What is the general character of the people? What is said of the attention paid to education, and of the common schools? Give an account of Washington college. Of the Washington female seminary. Of Jefferson college. By whom was the county chiefly settled?

55. WAYNE COUNTY.

This county lies in the north-eastern corner of Pennsylvania; being bounded on the north by the state of New York, and separated from the same state on the east by the river Delaware: on the south-east and south it has the counties of Pike and Monroe; and on the west, Luzerne and Susquehanna.

By the census of 1840 the population was 11,848.

This is an elevated region, being from 1200 to 1500 feet above the level of tide water: the face of the country is irregular and hilly rather than mountainous. Moosic mountain, which passes from Luzerne into the western part of this county, is the most considerable elevation, and divides the waters of the Lackawana which flow into the Susquehanna from those of the Lackawaxen which run towards the Delaware.

This mountain is the eastern boundary of the Wyoming and Lackawana coal basin, and the conglomerate rock, containing large rounded pebbles, which underlies the coal formation is found on its western side. It is possible that some of the lower coal seams extend into the edge of Wayne county at the northern point of the basin above Carbondale. East and north-east of the Moosic mountain are the red shales and sandstones of the next lower formations, spreading out widely over most of the county in nearly horizontal strata. These form picturesque cliffs, in some places of great height, along the Delaware and others of the larger streams: and some of the creeks fall over high perpendicular ledges of rock, forming cataracts which in a region more frequented by travellers would be much visited and admired.

The soil, though generally stony and rough, is in many places productive; agriculture is successful, and rapidly improving in the valleys and more fertile portions of the country. Much of the surface is covered with thick forests, among which beech and hemlock are the largest and most abundant timber. So universal is the growth of the former, that this region long ago received the name of "the beech woods," and is yet frequently so called. Some white pine still remains, but the best of it has long since been destroyed. Lumber of different kinds is produced in considerable quantity, which is mostly floated down the Delaware and Lackawaxen during the spring freshets.

The *Delaware* flows for more than 40 miles along the eastern border of Wayne, and has many creeks emptying into it of size amply sufficient to propel saw mills, grist mills and other machinery. The *Lackawaxen* has a general south-eastern course nearly through the middle of the county, until reaching the south-eastern boundary it enters Pike county, and thence flows eastward to the Delaware. In the northern part is *Starucca* creek, which runs northward and falls into the Susquehanna near the New York line.

Most of the streams rise from small lakes and ponds, which are very numerous, and some of them occupying an area of several hundred acres. Situated in the most unfrequented parts of the county, and surrounded by deep forests, their crystal waters sleep calmly embosomed in the dark woods, and find but rarely a solitary traveller upon their banks to gaze upon their serene and quiet beauty. These deep and secluded retreats, seldom visited except by the hunter or fisherman, offer an exquisite treat to the admirers of natural scenery; and if the time should ever come when our citizens will learn to appreciate the attractions of their own state, the forest lakes and waterfalls of Wayne county may find

poets and painters to visit their shores and to celebrate their romantic beauty.

Honesdale is now the county town, situated near the junction of Dyberry creek with the Lackawaxen, and at the point where the railroad from Carbondale unites with the artificial navigation constructed by the Delaware and Hudson Canal Company. It is a new town, but is already a flourishing place and the seat of considerable business in produce and merchandise.

Bethany, the former seat of justice, is about three miles north of Honesdale, on high ground, commanding a fine view of the surrounding country. Since the location of a new and more busy town in its immediate neighbourhood and the removal of the county business, it has somewhat declined in consequence. Near this town a fine sand is found well adapted to the manufacture of glass, and works were some years since established for that purpose, which have produced considerable quantities.

Besides these towns there are several villages in other parts of the county.

The improvements of the Delaware and Hudson Canal Company, in the navigation of the Lackawaxen, are of considerable importance to the people of this region; affording them increased facilities of trade, and furnishing a market as well as the means of transportation for produce. Several turnpike roads cross the county: the Easton and Belmont northward; the Milford and Owego north-westward: the Cochection and Great Bend westward, and some others. The common roads, as is usual in most rocky and thinly settled countries, are in many places rough and stony.

The system of education under the common school law is in general operation. There are 16 school districts, and 86 schools are reported as being kept open from 4 to 11 months in the year. There is an academy and also a female seminary at Honesdale.

This county, like several others in the northern part of the state, owes a considerable proportion of its population to settlers from the eastern states, who are generally characterized by their frugal and industrious habits.

In what part of the state is Wayne county, and how is it bounded? What is said of its general elevation, face of the country, mountains, &c.? Give some account of the geological formations. What is said of the soil and of agriculture?—of the forests and the production of lumber? Describe the principal streams,—lakes and ponds. How is Honesdale situated? Bethany, and what manufacture is established near it? What improvements in navigation are important to the inhabitants? Mention the turnpike roads. What is said of education, schools, &c.? From what quarter has the county derived a large portion of its population?

56. WESTMORELAND COUNTY.

This county is bounded on the north by Armstrong and Indiana; east by Cambria and Somerset; south by Fayette; and west by Washington and Allegheny. Population 42,699.

It has two mountain ranges, called Laurel hill and Chestnut ridge; the former of which constitutes its eastern boundary, sepa-

rating it from Cambria and Somerset. Chestnut ridge is about 12 miles further westward and runs in a direction nearly parallel with Laurel hill. The region included between them is called Ligonier valley, being so named from old fort Ligonier, which was erected here during the Indian wars before the revolution. The general



Ligonier valley.

character of the surface throughout the county is rolling and hilly, with deep valleys and ravines along the water courses.

Westmoreland is watered by several rivers and large streams. The *Conemaugh* forms the whole northern boundary to the mouth of Loyalhanna, and also thence to its junction with the Allegheny, having in this portion of its course the name of *Kiskiminetas*. Below the mouth of Kiskiminetas the county bounds on the *Allegheny* river for several miles. The *Youghiogeny* passes through the south-west, and one township, called Rostraver, extends west of this river to the Monongahela. *Loyalhanna* is a large stream which rises in Ligonier valley, and passing through a gap in Chestnut ridge, flows north-westward and falls into the Conemaugh near Saltzburg. *Sewickly* creek rises west of Chestnut ridge, and running westward, empties into the Youghiogeny. *Brush* creek also flows westward and unites with *Turtle* creek, a tributary of the Monongahela. The county is well watered by numerous smaller streams sufficient for mills and other manufacturing and agricultural purposes.

In its leading geological features, Westmoreland presents but little variety. It belongs wholly to the great bituminous coal formation, with the exception of the two mountain ridges already mentioned; in each of which the rocks underlying the coal measures have been upheaved in the form of

an arch, constituting what is called by geologists an anticlinal axis, and having the rock strata which contain the coal resting on them along their bases. Beds of coal, from three to nine feet in thickness, are opened in innumerable places, and the outcrop of coal seams may be found along almost every hill side. Several strata of limestone occur between the coal beds, some of which yield lime of good quality. Iron ore is found along the base of Laurel hill, where it has been mined in many places for use in the furnaces erected in its neighbourhood. In Derry township, south of Blairsville, there is a cave which is said to be a natural curiosity worthy of notice.

The soil is of a mixed character, being either calcareous, clayey, gravelly or slaty, according to the prevailing rock strata from the decomposition of which it has been derived. Much of it is fertile and well adapted to cultivation; the agriculture of this hilly region being productive and flourishing, wherever the industry of the farmer has been judiciously employed in its improvement.

Greensburg, the county town, containing 800 inhabitants, is situated on the turnpike from Bedford to Pittsburg, about 30 miles from the latter place. It has a large and commodious brick court house, county offices, and a stone prison; also a brick academy, and several churches belonging to Presbyterians, Lutherans, Methodists and Episcopalians. There is a steam mill in the borough, and several branches of domestic manufacture are carried on for the supply of the neighbourhood.

Mount Pleasant is an improving town in the southern part of the county, with a population of 554. *New Alexandria* is on the northern turnpike where it crosses Loyalhanna, and has 427 inhabitants. The other incorporated boroughs are *Youngstown* and *Ligonier*, both on the turnpike east of Greensburg, and *New Salem* on the northern turnpike. Besides these boroughs, there are a number of villages in various parts of the county, among which are Laughlinstown, West Newton, Adamsburg and Murraysville.

Westmoreland county is celebrated for the production of wheat of superior quality: rye, oats, indian corn and buckwheat are also successfully cultivated,—and cattle, sheep and swine are raised in great numbers. By far the most numerous portion of the inhabitants are engaged in agricultural pursuits, receiving from their well tilled farms the sure reward of their industry.

Numerous salt wells have been bored along the Conemaugh and Kiskiminetas, and also on Sewickly creek; from the water thus obtained salt to a large amount is annually manufactured. There are four or five blast furnaces in the county which manufacture pig iron and castings from the ore. Several woollen factories and paper mills are in operation,—flour and saw mills are numerous, some of which are driven by steam.

Timber is abundant, being in little demand for fuel in a region where coal may be dug from almost every hill side with less labour than is required to cut fire wood. The most common forest trees are oak of various kinds, hickory, walnut, sugar maple and poplar.

The assessed valuation of real and personal property, subject to county taxation in 1842, was \$6,025,109; the amount of county tax levied was \$12,919; State tax \$7,249.

The western division of the Pennsylvania canal passes along

the Conemaugh and Kiskiminetas through the whole extent of the northern boundary, affording to the inhabitants a means of transporting their surplus produce either to an eastern or a western market. It is, however, mostly sent eastward. Improvements in the navigation of the Youghiogeny river are proposed, which will doubtless, when carried into effect, prove highly convenient and advantageous to the people in the western part of the county.

There are several good turnpike roads:—that called the northern route from Harrisburg to Pittsburg extends through Westmoreland from the Conemaugh at Blairsville to Murraysville, a distance of 23 miles. The middle turnpike, leading from Philadelphia by way of Bedford to Pittsburg, passes through Laughlins-town, Ligonier, Youngstown and Greensburg. The turnpike from Somerset to Washington and Wheeling crosses the southern part of the county by way of Mount Pleasant and West Newton. Another turnpike has been recently constructed from Johnstown in Cambria county to Ligonier, 19 miles. A clay turnpike, 22 miles in length, extends through Ligonier valley from Centreville on the Conemaugh to Donegal.

Bridges have been constructed across the Conemaugh at Blairsville and Saltzburg; one over the Youghiogeny at West Newton, and several across the Loyahanna at different places.

The attention paid to education seems to be increasing. There are 23 school districts, of which 20 made reports to the superintendent in 1842, stating that there were 181 schools in operation under the law, in which the average period of instruction was upwards of five months in the year. The academy at Greensburg is reported as containing 27 pupils, and does not seem to be sufficiently patronized to maintain it in a very flourishing condition.

Presbyterians, Lutherans and Methodists are the most numerous religious persuasions; there also many Covenanters, Baptists, Catholics, &c.

The inhabitants are mostly descended from Irish and German families who, attracted by the fertility of the soil and other natural advantages, settled here at an early day when surrounded by peril and danger from the incursions of hostile Indians. Families were murdered or carried into captivity;—dwellings were burned,—crops destroyed,—and all the hardships and sufferings incidental to frontier settlements exposed to Indian cruelty were inflicted upon them: the loaded rifle was the constant companion of every settler at a time when each bush and thicket might conceal a savage foe; arms were carried to the field and to the church, and their lives were only secure by constant watchfulness. All this has, however, long since passed away, and fertile farms and thriving towns are now the abodes of those whose fathers heard the deep forest resound with the Indian war cry, and seldom lay down to rest secure from the tomahawk and scalping knife of the prowling and relentless enemy.

How is Westmoreland bounded? What two mountain ridges are there, and what is the name of the valley between them? What is the general

character of the surface? In what parts of the county are the Conemaugh, Allegheny, and Youghiogeny rivers? Mention the names, situation and direction of the principal creeks. To what geological formation does this county chiefly belong? What is said of the coal beds? Limestone? Iron ore? What are the varieties of soil, and its general fitness for cultivation? Give a description of the county town. Where is Mount Pleasant? New Alexandria? Youngstown and Ligonier? New Salem? Name some of the other villages. For what agricultural production is Westmoreland celebrated, and what others are mentioned? Where is salt manufactured? Mention the furnaces and manufacturing establishments. What is said of the timber? What canal passes along the northern side of the county? Describe the various turnpike roads. Bridges. Give an account of the state of education, common schools, &c. Name the principal religious societies. From whom are the inhabitants mostly descended? Relate some of the difficulties encountered by the early settlers.

57. WYOMING COUNTY.

Wyoming is a new county, established in 1842 from the north-western part of Luzerne, and is bounded north by Susquehanna, east and south by Luzerne, and west by Lycoming and Bradford. Population about 11,000.

The surface is generally hilly and uneven: in the north-west is the Mahoopeny mountain, with other considerable elevations, and further south some spurs of the North or Allegheny mountain which form bluffs along the river below Tunkhannock, from six to eleven hundred feet in height.

The rock formations consist almost exclusively of nearly horizontal strata of red shales and red and grayish sandstones (IX.) overlaid, on some of the high grounds in the western part, by the coarse compact sandstone (X) next above in order.

In the low grounds along the river and other streams the soil is very productive; the uplands, where not too rough and broken for cultivation, yield good crops of oats, potatoes, and grass: wheat thrives tolerably well, and indian corn grows on the bottom lands, but does not succeed so well on the hills.

The *North Branch* of Susquehanna enters this county at the north-western corner, flowing in a south-east direction to the southern boundary, where it enters Luzerne. The other principal streams are *Mahoopeny* and *Bowman's* creeks on the west of the Susquehanna, and *Meshoppen* and *Tunkhannock* creeks on the east.

Tunkhannock is the seat of justice, a flourishing town on the east side of the river, near the mouth of Tunkhannock creek, about 23 miles south of Montrose in Susquehanna county. There are a few small villages in other parts of the county.

Most of the inhabitants are engaged in agricultural pursuits. Beech, oak, sugar maple, hemlock and pine are the prevailing kinds of timber. Lumber is manufactured to some extent, and maple sugar is made for domestic use.

That portion of the State improvements known by the name of the *North Branch Extension*, being a continuation of the canal from the mouth of Lackawana to the northern line of the State, passes along the river through the whole breadth of this county, but is yet unfinished. Its completion would greatly benefit the

people of this district by affording them a conveyance to market for their surplus produce.

When was Wyoming county established, from what county was it taken, and how is it bounded? Describe the surface, and name the principal mountains. What is said of the rock formations? Give an account of the soil and productions. What river and creeks water the county? What is the county town and where situated? What is said of agriculture, timber, lumber, &c.? What canal passes through the county?

58. YORK COUNTY.

York county is bounded north by Cumberland; east by the Susquehanna river, which separates it from Dauphin and Lancaster; south by the state of Maryland; and west by Adams county. Population 47,010.

The face of the country is generally hilly and uneven, except in the limestone valley, which has a comparatively level surface. The principal elevations are a number of slate ridges extending westward from the Susquehanna in the southern part of the county; the Pigeon hills in the west; the Conewago hills towards the north; and still further north a series of hills and ridges extending from the South mountain to the Susquehanna.

The southern part of the county is occupied chiefly by rocks of the stratified primary class, consisting principally of talcose slates with occasional silicious strata, some of which approach the character of a sandstone. Veins and irregular nests of white quartz are common in the slate. In some places are found beds of slate which may be split with great regularity into thin plates, yielding roofing slate of good quality. Extensive quarries of this material are worked in the neighbourhood of Peach Bottom: it also occurs in the slate ridge south of the limestone valley, about six miles east of York. Near Slate Ridge church, about five miles west of the Susquehanna, are two or three small belts of serpentine, one of which is crossed by the State line. This serpentine is accompanied by chlorite slate containing beautiful octohedral crystals of iron, asbestos, actinolite, titaniferous and magnetic iron ore, &c. Red oxide of titanium occurs in several places, but is most abundant near the State line, about nine miles from the river. Beautiful cubic crystals of sulphuret of iron are found in the slate along the canal below Wrightsville, and are common in many other places; being frequently found loose in the soil and having their external surface changed by rust from a bright golden yellow to a brown colour. Iron ore has been dug near Susan Ann Furnace, 13 miles south-eastward from York; but is found of a better quality 8 miles further westward near the turnpike from York to Baltimore. On the canal, above M'Call's ferry, purple sulphuret and green carbonate of copper occur in the white quartz veins of the slate strata, but from appearances only in small quantity.

On Cabin branch run, 5 miles below Wrightsville, is a belt of limestone crossing from Lancaster county and terminating in a point a few miles west of the river, being separated from the limestone formation of York valley by a slate ridge which extends westward from the river below Wrightsville. Near the western termination of this limestone is a valuable deposit of iron ore which has been extensively mined for the supply of Margaretta furnace, in its immediate vicinity. Pursuing the same range further to the west, we find bands of calcareous rock near the York and Baltimore turnpike, and a little west of the Baltimore and Susquehanna rail road, 10 miles south of York. Here the rock is quarried as a limestone, and though by no means

pure, it is valuable for burning into lime for agricultural purposes. From this place it extends westward towards the village of Jefferson, being accompanied by iron ore which appears on the surface of the soil.

Extending westward from the Susquehanna at Wrightsville, is a belt of limestone (II) occupying the valley between the slate hills on the south, and the sandstone (I) and slates of Chicques ridge, which crosses the river above Wrightsville. This limestone stretches westward by York, as far as to the Pigeon hills, where it is divided into two branches; the southern extending south of those hills to Hanover, and thence into Adams county; while the northern is soon lost beneath the overlying red shales and sandstones north of the Pigeon hills. At several places within its range this limestone presents beds which are white, flesh coloured, and variegated, where a beautiful marble might be obtained if the strata were sufficiently thick and compact to afford solid blocks of sufficient size to be profitably worked. Iron ore occurs at several places along the south side of Pigeon hills, in the neighbourhood of Hanover, and between this and Littlestown; but some of it seems to be of rather indifferent quality. A dike of trap rock crosses the limestone valley 4 miles east of York, and another a little west of the town.

The rocks of the Pigeon hills consist principally of slates and sandstones which rise through the limestone of the valley, forming an elliptical range of elevations that extend from within eight miles of York to the western line of the county. The slate of these hills occasionally contains a little green carbonate of copper, and fine specimens of foliated oxide of iron occur in the veins of white quartz which traverse the slate.

In the ridge prolonged westward from the Susquehanna above Wrightsville, we have a hard white sandstone (I) with accompanying beds of slate, extending on the river from a little above Wrightsville to the mouth of Codorus creek, above which a small point of limestone crosses the river from the east side, appearing at the village of New Holland, and terminating a short distance west of the river. The western termination of the sandstone ridge is a little east of the turnpike from York to Harrisburg.

North of this is a wide extent of the middle secondary red shales and sandstones, the southern border of which overlaps the limestone at the river above New Holland, and west of it rests upon the slate on the north of the ridge last mentioned, until it reaches the main limestone of the valley about three miles north of York. Thence ranging south-westward the red shales and sandstones border upon the limestone, until, at a point about 10 miles west from York, they meet the slate on the north side of the Pigeon hills and extend along their northern base to the line of Adams county. The northern border of the red sandstone formation extends to the limestone of Cumberland valley, meeting it in an irregular line on the south of Yellow Breeches creek, and in the neighbourhood of Lisburn, crossing that stream into Cumberland county. The upper beds of this formation are here marked by their usual conglomerate character, containing rounded pebbles of calcareous and silicious rocks. The red sandstone in many places affords an excellent material for building, and has been much used for furnace hearths, architectural purposes, locks, aqueducts, bridges, and other uses where cut stone is required.

In the northern part of the county are many hills and ridges of trap rock, some of which are of such elevation as to assume the character of mountains. These are chiefly in the rough and rocky region between Cone-wago and Yellow Breeches creeks. Magnetic iron ore occurs in several places associated with these rocks; traces of copper also appear; and the altered shales and sandstones in the vicinity of the trap ridges about Lewisburg and Newberry contain foliated and micaceous oxide of iron, epidote, &c.

The soil of this county is as various as its geological formations, In the southern part it is thin and unproductive; but by the free

use of lime as a manure may be so much improved as to produce good crops of grass and grain. The limestone valley has a soil of remarkable fertility and contains many beautiful and well cultivated farms. Much of the red shale soil is of good quality and susceptible of high improvement by the use of lime and judicious cultivation. The soil on the trap hills, though generally rough and stony, produces good crops when properly farmed.

The *Susquehanna* river flows along the eastern border, through a distance of about 50 miles. *Yellow Breeches* creek, flowing eastward to the Susquehanna, forms most of the northern boundary. *Conewago* creek is a large stream, rising by several branches in Adams county, and having an easterly course to the Susquehanna at York Haven. A southern branch of this creek is called *Little Conewago*. The *Codorus* rises by two main branches in the south-west, and flows north-eastward by the town of York, emptying into the Susquehanna below New Holland. *Muddy creek*, is a considerable stream in the south-east, falling into the river above Peach Bottom. These, together with numerous smaller streams which water the county, afford power for a great number of mills, forges, furnaces and other manufacturing establishments.

York, the county town, is pleasantly situated on Codorus creek, in the limestone valley, eleven miles west of the Susquehanna. It is a neat, well-built town, and contains an elegant and spacious new court-house, a prison, a bank, an academy, and 10 churches most of which are substantial brick buildings. Its population, including the adjoining villages of Frystown and Buttstown, is 5,415. It is a place of considerable business; being connected with Philadelphia and Baltimore by rail roads, and having a canal and lock navigation down the Codorus to the Susquehanna. Good turnpike roads lead from it to Lancaster, Baltimore, Gettysburg, and Harrisburg. The town is supplied with excellent water from a spring near the foot of the slate ridge on the south. Five weekly newspapers are published here, three in the English language, and two in the German. A county Lyceum has been established, which has a collection of minerals and specimens in natural history, and which holds meetings for lectures and the discussion of scientific subjects. There are also societies for the promotion of temperance, and for various moral and charitable purposes. During the Revolutionary war, when Congress were driven from Philadelphia, they retired to York, and occupied the court-house for their deliberations. While in session here, Philip Livingston, one of the members, died, and was buried in the cemetery of the German Reformed church, where a monument has been erected to his memory, consisting of a pyramid of white marble, surmounted by an urn.

Hanover is an incorporated borough, containing a population of 1,070, situated in a fertile neighbourhood in the south-west of the county, 18 miles from York, and inhabited chiefly by Germans.

Wrightsville is a flourishing borough on the west side of the Susquehanna, opposite to Columbia, with which it is connected by a bridge having a rail road laid on it.

Shrewsbury (Strasburg) is on the Baltimore turnpike, 14 miles south of York, and a few miles further south-eastward is *Mechanicsburg*. *Liverpool* is a village on the Harrisburg turnpike, 6 miles north of York; and *York Haven* is on the same road, at the junction of Conewago creek with the Susquehanna. *Dover* is 7 miles north-west from York: *Dillsburg*, *Lewisburg*, and *Newberry* are villages in the northern part of the county.

The agricultural productions are numerous and important, consisting of various kinds of grain, live stock, pork, clover seed, &c. The cultivation of tobacco is pursued to some extent and has been found profitable. Upwards of 160,000 pounds are annually produced in the county.

There are four blast furnaces, four forges and several foundries for the manufacture of iron; a great number of flour mills; 10 woollen factories; 53 tanneries, producing a large amount of leather; a number of establishments for the manufacture of carriages, agricultural and domestic implements; and numerous other productions of manufacturing and mechanical industry. York county has 216 distilleries, which is nearly double the number of those in any other county, and nearly one fourth of the whole number contained in the State.

The assessed valuation of real and personal property, subject to county taxation in 1842, was \$9,276,514: on which was levied a county tax amounting to \$41,913: State tax \$12,150.

None of the state canals or rail roads are situated in York county; but there have been a number of improvements constructed by companies, which are important to its trade and convenience. The Susquehanna and Tide-water canal extends from Wrightsville down the western side of the river to the Maryland line, and is thence continued to Havre de Grace, at the head of Chesapeake bay. The Codorus navigation is by means of canal and slack water pools along that stream from the borough of York to the Susquehanna. The York and Wrightsville rail road connects with the Philadelphia and Columbia rail road; affording a continuous line from York to Philadelphia, a distance of 94 miles. Another rail road extends southward from York to the Maryland line, and continues thence to Baltimore, by which a communication may be had with that city in about four hours' travel.

A good turnpike road leads from Wrightsville through York to Gettysburg in Adams county, and is continued thence to Chambersburg, where it connects with the turnpike from Harrisburg to Pittsburg. The turnpike from Baltimore to York passes through the southern part of the county, and is continued northward from York to Harrisburg. There is also a turnpike from Baltimore to Carlisle which passes through Hanover, in the south-west of York county. A noble bridge crosses the Susquehanna at Wrightsville, and substantial bridges are erected over the principal streams where they are crossed by the main roads.

The general state of education is not very flourishing. Schools are tolerably well sustained in the principal towns; but in many parts of the country they are much neglected. There are in all

32 school districts; 17 of which have accepted the law establishing a system of education by common schools, and have 117 schools in operation, which are open for instruction on a general average rather more than five months in a year.

There are upwards of 30 places of public worship, belonging principally to Lutherans, German Reformed, Presbyterians, Methodists, Episcopalians and Friends.

This county was originally a part of Lancaster, and settlements were commenced here at an early period. In 1722, the manor of Springettsbury was surveyed by order of the governor, in the name and for the use of Springett Penn. It was situated on the west side of the Susquehanna; extending on the river from nearly opposite the mouth of Conestoga to some distance above the place where Wrightsville now stands, and reaching westward from the river a distance of ten miles; containing upwards of 75,000 acres.

A considerable portion of what is now York county was claimed by the proprietors of Maryland, as being within their chartered limits; and settlements were made under their authority, which afterwards led to protracted and serious dissensions. Many Germans had settled west of the Susquehanna under Pennsylvania titles; but in order to avoid the payment of the provincial taxes they accepted titles from Maryland. Being afterwards convinced that this step might be injurious to their interests, they renounced the authority of Lord Baltimore and sought protection from Pennsylvania. The sheriff of Baltimore county was sent with a force of 300 men to eject them, and was met by the sheriff of Lancaster, also supported by a strong party, who without violence induced the Maryland officer to return,—the Germans having promised to consult together and give an answer to the requisition of Lord Baltimore. But soon afterwards a party from Maryland, under Captain Cressap, attempted to drive out the Germans, and killed one of the persons who resisted them. The sheriff of Lancaster county again came to the rescue, and after a sharp contest, in which some were killed and Cressap himself wounded, he was taken and conveyed to prison at Philadelphia. This led to further acts of violence on the part of Maryland,—and a series of contentions and skirmishes ensued, in which many of the Germans were driven from their farms, and the whole settlement harassed and disturbed. A number of the rioters having been seized and taken to the prison at Lancaster, a party of Marylanders proceeded thither, broke open the jail and released them. Soon after this, in 1737, an order of the king in council, on the subject of the boundary between the two provinces, induced both parties to refrain from further violence.

Among the early settlers were also many emigrants from the north of Ireland, and the present population of the county are mostly descendants from them and from the Germans. The German language is still spoken in the middle and western parts; and newspapers are printed in that language at York and Hanover.

How is York county bounded? Describe the face of the country, and name the principal hills. What kinds of rock are found in the southern

part? Where are the slate quarries? What minerals occur? At what places is iron ore found? Describe the range of the limestone in York valley. What is said of marble and iron ore in it? What is the rock formation of the Pigeon hills? In the ridge west of the Susquehanna above Wrightsville? What formation lies north of this, and what is its extent from south to north? What valuable material is found in it, and for what purposes used? Where are hills of trap rock, and what minerals are found there? Describe the different kinds of soil. What river flows along the eastern boundary? Name the principal creeks, and describe their course. How is the town of York situated, and what are its public buildings? What is said of its business, and its facility of communication with other places? Societies for literary and moral improvement? What distinguished person was buried here, and on what occasion? Where is Hanover? Wrightsville? Shrewsbury? What other places are mentioned? What are the productions of agriculture? Of manufactures? What canals and rail roads are in this county? Turnpikes? What is said of education and common schools? Religious societies? Of the early settlements? Where was the manor of Springettsbury, and of what extent? Relate some of the difficulties that occurred between the Maryland and Pennsylvania claimants. How were the disputes terminated? From whom are the present inhabitants mostly descended?

TRAVELLERS' GUIDE:

CONTAINING THE PRINCIPAL STAGE, RAIL ROAD AND CANAL ROUTES IN PENNSYLVANIA, WITH THE DISTANCES FROM PLACE TO PLACE.

<i>From Philadelphia to</i>	Miles.	Miles.	<i>From Philadelphia to</i>	Miles.	Miles.
<i>Pittsburg by turnpike.</i>			<i>Pittsburg by the north-</i>		
To Buck tavern	10		<i>ern turnpike.</i>		
Paoli	9	19	To Harrisburg, as above	98	
Downingtown	10	29	Duncan's Island	16	114
Coatesville	7	36	Millerstown	13	127
Sadsbury	3	39	Thompsons town	6	133
Paradise	13	52	Mexico	5	138
Lancaster	10	62	Mifflintown	3	141
Mountjoy	12	74	Lewistown	12	153
Elizabethtown	7	81	McVeytown (Waynes-		
Middletown	8	89	burg)	11	164
HARRISBURG	9	98	Huntingdon	22	186
Carlisle	18	116	Alexandria	8	194
Shippensburg	21	137	Frankstown	16	210
Green Village	6	143	Hollidaysburg	3	213
Chambersburg	5	148	Summit of Allegheny	10	223
St. Thomas	8	156	Munster	4	227
Loudon	6	162	Ebensburg	5	232
M'Connellstown	7	169	Armagh	18	250
Juniata crossings	17	186	Blairsville	14	264
Bloody run	6	192	New Alexandria	8	270
Bedford	8	200	New Salem	8	278
Shellsburg	9	209	Murraysville	7	285
Stoystown	20	229	Pittsburg	21	306
Laughlontown	16	245			
Ligonier	3	248	<i>From Philadelphia to</i>		
Youngstown	10	258	<i>Pittsburg by rail road</i>		
Greensburg	10	268	<i>and canal.</i>		
Adamsburg	6	274	1. Philadelphia and Co-		
Stewartsville	7	281	lumbia r. r.		
Pittsburg	19	300	To Schuylkill viaduct	3	

	Miles.	Miles.		Miles.	Miles.
Buck tavern	8	11	From Philadelphia to		
Spread Eagle	5	16	Wilmington.		
Paoli	5	21	To Darby	7	
Warren	2	23	Chester	8	15
Valley creek	7	30	Marcus Hook	5	20
Downingtown	3	33	Wilmington	8	28
Coatesville	8	41			
Parkesburg	5	46	From Philadelphia to		
Gap tavern	6	52	Port Deposit.		
Mill creek	5	57	To Darby	7	
Soudersburg	3	60	Nether Providence	6	13
Lancaster	9	69	Concord	8	21
Mount Pleasant	8	77	Kennet Square	12	33
Columbia	5	82	New London X roads	10	43
2. Eastern Division of			Port Deposit	18	61
Pennsylvania canal.					
Marietta	3	85	From Philadelphia via		
Bainbridge	6	91	West Chester to Lan-		
Middletown	8	99	caster.		
Highspire	3	102	To Haverford	12	
HARRISBURG	6	108	Newton	5	17
Dauphin	8	116	West Chester	10	27
Mouth of Juniata	8	124	Marshallton	4	31
3. Juniata Division of			Gap	17	48
canal.			Strasburg	7	55
Newport	10	134	Lancaster	8	63
Thompsontown	11	145			
Mexico	7	152	From Philadelphia via		
Mifflintown	4	156	Reading and Pottsville		
Lewistown	14	170	to Northumberland.		
McVeytown	14	184	To Norristown	16	
Aughwick Falls	12	196	Trappe	9	25
Huntingdon	17	213	Pottstown	10	35
Petersburg	7	220	Reading	17	52
Alexandria	7	227	Hamburg	15	67
Williamsburg	13	240	Orwigsburg	11	78
Frankstown	10	250	Pottsville	8	86
Hollidaysburg	3	253	Newcastle	4	90
4. Allegheny Portage r. r.			Mahanoy creek	8	98
Inclined Plane No. 10	4	257	Shamokin creek	14	112
Summit level	6	263	Sunbury	12	124
Conemaugh viaduct	19	282	Northumberland	2	126
Tunnel	4	286	From Philadelphia via		
Johnstown	4	290	Bethlehem and Wilkes-		
5. Western Division of			barre to Montrose.		
canal.			To Germantown	6	
Laurel Hill	6	296	Chestnut hill	3	9
Lockport	10	306	Spring house	8	17
Blairsville	13	319	Montgomery square	4	21
Sakzбург	16	335	Lexington	4	25
Salt works	7	342	Sellersville	7	32
Warrentown	5	347	Quakertown	5	37
Leechburg	10	357	Fryburg	6	43
Allegheny aqueduct	3	360	Bethlehem	8	51
Freeport	2	362	Nazareth	8	59
Logan's ferry	13	375	Windgap	8	67
Pine creek	12	387	Mount Pocono	14	81
Pittsburg	7	394	Stoddartsville	12	93
			Wilkesbarre	18	111

	Miles.	Miles.		Miles.	Miles.
Kingston	1	112	Dundaff	7	49
New Troy	4	116	Lenox	7	56
Exeter	9	125	Harford	6	62
Eaton	2	127	Montrose	9	71
Tunkhannock	15	142	Friendsville	10	81
Springville	10	152	Owego	19	100
Montrose	13	165			
<i>From Philadelphia to</i>			<i>From Easton to Great</i>		
<i>Easton.</i>			<i>Bend.</i>		
To Rising Sun	3		To Wind gap	13	
Jenkintown	7	10	Stanhope	20	33
Willow Grove	3	13	Sterling	15	48
Horsham	3	16	Clarkstown	20	68
Doylestown	8	24	Mount Pleasant or		
Danborough	4	28	Belmont	12	80
Ottsville	11	39	Great Bend	23	103
Monroe	6	45			
Easton	11	56	<i>From Easton via Mauch</i>		
<i>From Philadelphia to</i>			<i>Chunk to Berwick.</i>		
<i>Easton by river and</i>			To Bath	10	
<i>canal.</i>			Kernsville	5	15
To Bristol	20		Cherryville	4	19
Morrisville	10	30	Lehigh Gap	4	23
Yardleyville	4	34	Leighton	8	31
Taylorsville	4	38	Mauch Chunk	4	35
Brownsburg	3	41	Beaver Meadow	12	47
Newhope	4	45	Hazeltown	4	51
Lumberville	7	52	Conyngham	6	57
Point Pleasant	2	54	Berwick	10	67
Erwinna	7	61			
Monroe	8	69	<i>From Easton to Reading.</i>		
Easton	11	80	To Bethlehem	12	
<i>From Philadelphia to</i>			Allentown	6	18
<i>Trenton.</i>			Trexlerstown	8	26
To Frankford	5		Kutztown	9	35
Holmesburg	4	9	Reading	18	53
Andalusia	4	13			
Bristol	6	19	<i>From Reading to Har-</i>		
Tullytown	4	23	<i>risburg.</i>		
Morrisville	6	29	To Womelsdorf	14	
Trenton	1	30	Myerstown	7	21
<i>From Easton to Milford.</i>			Lebanon	6	27
To Richmond	14		Palmyra	10	37
Delaware water gap	11	25	Hummelstown	6	43
Stroudsburg	4	29	HARRISBURG	9	52
Coolbaugh's	7	36			
Bushkill	6	42	<i>From Harrisburg to</i>		
Dingman's ferry	13	55	<i>Pottsville.</i>		
Milford	8	63	To Linglestown	8	
<i>From Milford to Owego,</i>			West Hanover	8	16
<i>New York.</i>			East Hanover	5	21
To Tafton	24		Jonestown	5	26
Clarkstown	15	39	Stumpstown	4	30
Carbondale	3	42	Pinegrove	10	40
			Friedensburg	9	49
			Schuylkill Haven	4	53
			Pottsville	5	58

	Miles.	Miles.		Miles.	Miles.
<i>From Harrisburg to</i>			<i>From Lancaster to Reading.</i>		
<i>Wilkesbarre.</i>			To Neffsville	4	
To Duncan's Island	16		Litiz	4	8
New Buffalo	4	20	Ephrata	8	16
Liverpool	11	31	Reamstown	4	20
M'Kee's half falls	9	40	Adamstown	5	25
Selinsgrove	12	52	Reading	10	35
Northumberland	4	56			
Danville	12	68	<i>From Lancaster via York</i>		
Bloomsburg	9	77	<i>and Gettysburg to</i>		
Berwick	12	89	<i>Chambersburg.</i>		
Nanticoke	17	106	To Columbia	10	
Wilkesbarre	9	115	Wrightsville	1	11
			York	11	22
<i>From Northumberland to</i>			Abbottstown	15	37
<i>Bellefonte via Wil-</i>			Oxford	5	42
<i>liamsport.</i>			Gettysburg	9	51
To Milton	12		Chambersburg	25	76
Muncy	12	24			
Williamsport	14	38	<i>From Gettysburg to</i>		
Jersey shore	14	52	<i>M'Connellstown, via</i>		
Lock Haven	10	62	<i>Greencastle.</i>		
Bellefonte	24	86	To Fairfield	8	
			Waynesboro	13	21
<i>From Harrisburg to Erie</i>			Greencastle	9	30
<i>via Lewistown.</i>			Mercersburg	10	40
To Lewistown	55		M'Connellstown	10	50
Bellefonte	30	85			
Milesburg	2	87	<i>From Carlisle to Balti-</i>		
Philipsburg	24	111	<i>more.</i>		
Clearfield	16	127	To York springs	14	
Curwinsville	5	132	East Berlin	7	21
Brookville	35	167	Abbottstown	3	24
Clarion	20	187	Hanover	6	30
Franklin	25	213	Reisterstown, Md.	28	58
Meadville	24	237	Baltimore	16	74
Erie	38	275			
			<i>From Baltimore to Whee-</i>		
<i>From Harrisburg to Ha-</i>			<i>ling.</i>		
<i>gerstown, Maryland,</i>			To Frederick by rail road	60	
<i>by Chambersburg rail</i>			Hagerstown	25	85
<i>road.</i>			Clear spring	11	96
To Mechanicsburg	8		Hancock	13	109
Carlisle	10	18	Bevansville	17	126
Newville	12	30	Flintstone	10	136
Shippensburg	10	40	Cumberland	13	149
Chambersburg	12	52	Frostburg	10	159
Greencastle	11	63	Little crossing	10	169
Hagerstown	11	74	State line	13	182
			Petersburg, Pa.	2	184
<i>From Harrisburg to Bal-</i>			Somerfield(Smithfield)	4	188
<i>timore.</i>			Uniontown	21	209
To New Cumberland	3		Brownsville	12	221
York Haven	11	14	Beallsville	8	229
Liverpool	4	18	Hillsboro	3	232
York	6	24	Washington	11	243
Shrewsbury or Stras-			Claysville	11	254
burg	14	38	West Alexandria	6	260
Baltimore	34	72	Wheeling, Va.	15	275

	Miles.	Miles.		Miles.	Miles.
<i>From Bedford to Wheeling.</i>			<i>Butler</i>	8	30
<i>To Somerset</i>	37		<i>Centreville</i>	15	45
<i>Mount Pleasant</i>	25	62	<i>Mercer</i>	16	61
<i>West Newton</i>	14	76	<i>Meadville</i>	30	91
<i>Monongahela city</i>	10	86	<i>Waterford</i>	23	114
<i>Washington</i>	20	106	<i>Erie</i>	15	129
<i>Wheeling</i>	32	138	<i>From Pittsburg to Beaver.</i>		
<i>From Pittsburg to Wheeling.</i>			<i>To Sewickly bottom</i>	14	
<i>To Harriotsville</i>	10		<i>Economy</i>	4	18
<i>Canonsburg</i>	8	18	<i>Beaver</i>	10	28
<i>Washington</i>	7	25	<i>From Ebensburg to Butler.</i>		
<i>Wheeling</i>	32	57	<i>To Indiana</i>	26	
<i>From Pittsburg to Erie.</i>			<i>Kittaning</i>	26	52
<i>To Bakerstown</i>	16		<i>Butler</i>	20	72
<i>Woodville</i>	6	22			

CONGRESSIONAL DISTRICTS, EACH ELECTING ONE REPRESENTATIVE.*

- I. Southwark, Moyamensing and Passyunk, in the county of Philadelphia, and Cedar and New Market wards of the city.
- II. The city of Philadelphia, except Cedar and New Market wards.
- III. Northern Liberties and Spring Garden, in Philadelphia county.
- IV. Kensington, North and South Penn, Roxborough, Germantown, Bristol, Unincorporated Northern Liberties, Oxford, Lower Dublin, Byberry, Moreland, Blockley, West Philadelphia, and Kingessing, in Philadelphia county.
- V. Delaware and Montgomery.
- VI. Bucks and Lehigh.
- VII. Chester.
- VIII. Lancaster.
- IX. Berks.
- X. Northampton, Carbon, Monroe, Pike, and Wayne.
- XI. Luzerne, Columbia and Wyoming.
- XII. Bradford, Susquehanna and Tioga.
- XIII. Lycoming, Northumberland, Union and Clinton.
- XIV. Dauphin, Lebanon and Schuylkill.
- XV. Adams and York.
- XVI. Cumberland, Perry and Franklin.
- XVII. Centre, Huntingdon, Juniata, and Mifflin.
- XVIII. Greene, Fayette and Somerset.
- XIX. Westmoreland, Bedford and Cambria.
- XX. Washington and Beaver.
- XXI. Allegheny.
- XXII. Venango, Mercer and Crawford.
- XXIII. Erie, Warren, McKean, Clarion, Potter and Jefferson.
- XXIV. Butler, Armstrong, Indiana and Clearfield.

* Senators in Congress are elected by the Legislature.

STATE SENATORIAL DISTRICTS.

	SENATORS.
1. City of Philadelphia	2
2. County of Philadelphia	3
3. Montgomery	1
4. Chester and Delaware	1
5. Berks	1
6. Bucks	1
7. Lancaster and Lebanon	2
8. Schuylkill, Carbon, Monroe and Pike	1
9. Northampton and Lehigh	1
10. Susquehanna, Wayne and Wyoming	1
11. Bradford and Tioga	1
12. Lycoming, Clinton and Centre	1
13. Luzerne and Columbia	1
14. Northumberland and Dauphin	1
15. Mifflin, Juniata and Union	1
16. Perry and Cumberland	1
17. York	1
18. Franklin and Adams	1
19. Huntingdon and Bedford	1
20. Clearfield, Indiana, Cambria and Armstrong	1
21. Westmoreland and Somerset	1
22. Fayette and Greene	1
23. Washington	1
24. Allegheny and Butler	2
25. Beaver and Mercer	1
26. Crawford and Venango	1
27. Erie	1
28. Warren, Jefferson, Clarion, McKean and Potter	1
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REPRESENTATIVE DISTRICTS.

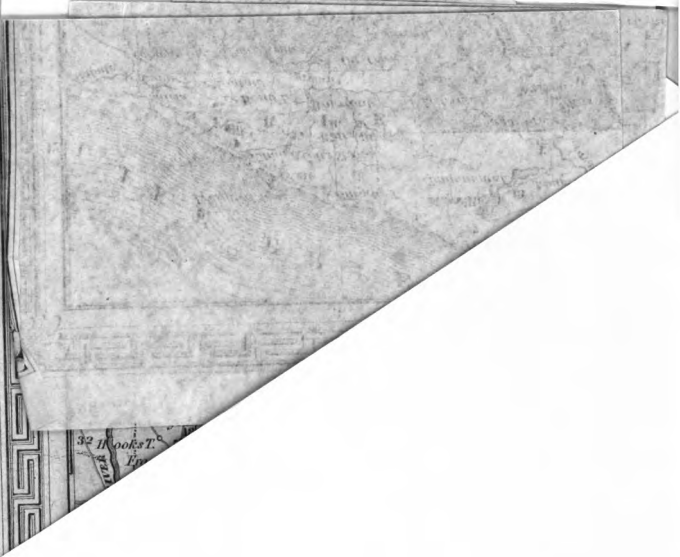
	REPS.		REPS.
Adams	1	Brought forward	33
Allegheny	4	Erie	2
Armstrong	1	Franklin	2
Bedford	2	Fayette	2
Beaver	2	Cambria	1
Bradford	2	Lebanon	1
Berks	4	Greene	1
Bucks	3	Huntingdon	2
Butler	1	Indiana	1
Crawford	2	Jefferson, Clarion and Venango	2
Centre and Clearfield	2	Philadelphia county	8
Chester	3	Philadelphia city	5
Columbia	1	Montgomery	3
Cumberland	2	York	3
Delaware	1	Lancaster	5
Dauphin	2	Schuylkill	2
	<hr/> 33		<hr/> 73

	REPS.		REPS.
Brought forward	73	Brought forward	87
Lehigh and Carbon	2	Northumberland	1
Northampton and Monroe	3	Union and Juniata	2
Luzerne	2	Perry	1
Wayne and Pike	1	Somerset	1
Susquehanna and Wyoming	2	Mercer	2
Tioga	1	Washington	2
Lycoming, Clinton and Potter	2	Westmoreland	3
Mifflin	1	Warren and McKean	1
	<hr/> 87		<hr/> 100

THE END.



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